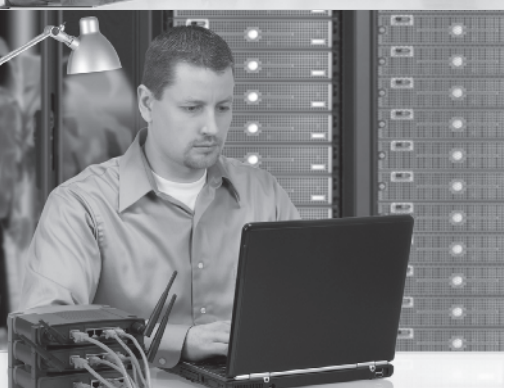
Chapter

1

Planning the Logical Architecture



TOPICS COVERED IN THIS CHAPTER

- ✓ SharePoint Editions and Features
- ✓ Understanding the SharePoint Logical Architecture
- ✓ Designing a Logical Taxonomy

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Implementing a SharePoint Server 2010 solution begins with understanding the features and services offered by the product line and the way in which SharePoint structures information. In addition, you should understand how you can impact the structure of this information. In this chapter, your journey will begin with an explanation of these important topics.

First, you will explore the different editions of SharePoint 2010 and the features offered by these editions. You must understand them to ensure that you select the right one for your needs. A project is doomed to experience budget overruns if the wrong edition is selected from the start.

Next, you need to understand the SharePoint information architecture. You will look into the hierarchy of technologies and logical components used in a SharePoint information structure. From server farms to individual pages and list items, they are all defined in this chapter.

Finally, you should understand how to plan your logical hierarchy. This planning process is called "designing a logical taxonomy" in the Microsoft 70-668 objectives. If you are preparing for the 70-668 exam, this chapter will provide the information you need to understand the Design a Logical Taxonomy objective and subobjective set.

SharePoint Editions and Features

In this section, the SharePoint product line will be introduced. You will be provided with a definition of the SharePoint products and be given examples of the business uses of the software. Next, you will explore the different SharePoint editions and learn about licensing and acquisition. Finally, you will compare the different editions and the features they offer.

The terms used to describe Microsoft's SharePoint products can be rather confusing. For example, the term *SharePoint 2010* can be used to reference the entire product line; however, several different editions of SharePoint 2010 exist. SharePoint Foundation 2010 is comparable to WSS in previous SharePoint versions. SharePoint Server 2010 is comparable to MOSS in SharePoint 2007. This chapter will help you clarify the differences among the editions so you can make an educated decision during product selection.

SharePoint Defined

SharePoint 2010 is a collection of products that serve as a business collaboration platform for organizations. SharePoint is a multitier application that relies on several other Microsoft technologies. For example, SharePoint requires a database and uses SQL Server for that database. SharePoint requires a web server and uses Internet Information Services (IIS) for that web server.

SharePoint has often been called a content management system (CMS). A CMS is a system used to add, modify, approve, and delete content within websites. Although it is true that SharePoint is a CMS, it is much more than a simple CMS. SharePoint includes several features that take it far beyond the typical CMS. These features include:

- Access to external databases and data sources
- Built-in calendaring functions
- Discussion forum support capabilities
- File sharing through document libraries
- Advanced search functions and customization
- Microsoft Office application integration
- Customizations and feature additions through simple web parts
- Social tagging capabilities
- Business process automation through workflows

The preceding list does not include all the ways that SharePoint provides customization of the content delivery method through the use of blogs, wikis, user profiles, versioning, surveys, and task lists. The point is that SharePoint is more than just a simple CMS. It is an entire-enterprise-content-collaboration solution.

Businesses and organizations can use SharePoint for many purposes, including:

- **Standard intranet provisioning:** SharePoint can be used to provide the traditional web services of a corporate intranet, serving up web pages and documents for internal users.
- **Project management:** SharePoint is an excellent tool for centralization of project management information. Tasks can be managed from within SharePoint and calendars can be associated with these tasks. Project workers can be notified when their tasks should begin and when they are due for completion.
- **Document sharing:** Everything from Excel workbooks to Adobe PDF documents can be stored in SharePoint document libraries. In some cases, SharePoint understands the document format and can offer special functions, such as data analysis for Excel workbooks. In other cases, SharePoint simply provides the storage location for the documents.
- **Resource library management:** Resources such as images, media files, and other data resources can be managed using SharePoint resource libraries and external data lists.
- **Line-of-business integration:** SharePoint can pull data from line-of-business (LOB) applications, such as SAP and J.D. Edwards, into reports and lists in SharePoint sites.

- **Team collaboration:** The collaboration features of SharePoint include discussion forums, task lists, document libraries, and workflows. Each of these features adds to the collaboration capabilities of SharePoint and can be customized for the needs of the organization.

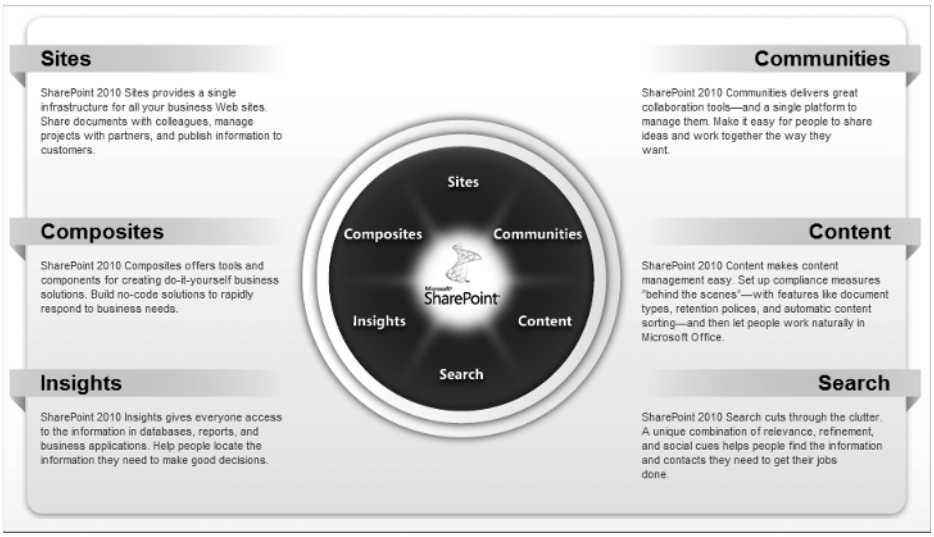
As you can see, SharePoint is a flexible application offering many different uses for the modern information-based organization. Exercise 1.1 will help you explore the SharePoint product capabilities further.

EXERCISE 1.1

Exploring the SharePoint Product Capabilities

In this exercise, you will use the Microsoft SharePoint product capabilities page to explore the features and uses of the SharePoint product line.

1. Open the Internet Explorer web browser.
2. Navigate to `http://sharepoint.microsoft.com/en-us/product/capabilities/Pages/default.aspx`.
3. You are presented with a graphical representation of the primary capabilities of SharePoint 2010.


Sites
SharePoint 2010 Sites provides a single infrastructure for all your business Web sites. Share documents with colleagues, manage projects with partners, and publish information to customers.
Communities
SharePoint 2010 Communities delivers great collaboration tools—and a single platform to manage them. Make it easy for people to share ideas and work together the way they want.
Composites
SharePoint 2010 Composites offers tools and components for creating do-it-yourself business solutions. Build no-code solutions to rapidly respond to business needs.
Content
SharePoint 2010 Content makes content management easy. Set up compliance measures "behind the scenes"—with features like document types, retention polices, and automatic content sorting—and then let people work naturally in Microsoft Office.
Insights
SharePoint 2010 Insights gives everyone access to the information in databases, reports, and business applications. Help people locate the information they need to make good decisions.
Search
SharePoint 2010 Search cuts through the clutter. A unique combination of relevance, refinement, and social cues helps people find the information and contacts they need to get their jobs done.
Sites
Communities
Composites
Content
Insights
Search
SharePoint

4. Click the Sites capability in the upper-left corner of the screen to learn more about sites.
5. Click the Back button in the Internet Explorer browser.
6. Click on the next capability to learn more about it.
7. Repeat steps 5 and 6 until all six capabilities have been explored.

SharePoint 2010 is not an entirely new product. SharePoint has existed as a product in previous versions, and the SharePoint 2010 release adds new features. One of the primary new features is a major interface overhaul. The result is a look-and-feel similar to Microsoft Office 2007 and 2010 with the use of the Ribbon. Exercise 1.2 will help you explore the new interface using Microsoft's website.

EXERCISE 1.2

Viewing the New SharePoint 2010 Interface

In this exercise, you will use the Microsoft website to access and view a video of the new SharePoint 2010 interface. You will learn how to install SharePoint 2010 in Chapter 4, "Planning for Farm Deployment." This video will allow you to experience the interface without installing the product.

1. Open the Internet Explorer web browser.
2. Navigate to `http://www.microsoft.com`.
3. In the Bing search field, enter the phrase **sharepoint 2010 feature details sharepoint ribbon** and click the Search Microsoft.com magnifying glass button.

4. Click the first link titled "Feature Details" to navigate to the page. (Instead of searching in steps 2 and 3, you can navigate directly to the following URL: `http://sharepoint.microsoft.com/en-us/product/Pages/Feature-Details.aspx?Capability=Sites&FeatureID=16`).
5. Click in the video window anywhere to begin playback. (Alternatively, you may download the video to your computer and then play it.)

SharePoint Editions

When planning a SharePoint implementation, you must understand the four different editions so that you can select the right one for your needs. The four editions are

- SharePoint Foundation 2010
- SharePoint Server 2010 Standard
- SharePoint Server 2010 Enterprise
- SharePoint Server 2010 for Internet Sites

In implementation, the SharePoint Server 2010 editions are really just different licenses. The only installation difference is in selecting the appropriate license you plan to implement. During installation and configuration, you are asked to provide the Client Access License (CAL) product key. If you enter a standard CAL, you will enable the Standard Edition feature set. If you enter an enterprise CAL, you will enable the Enterprise feature set.

SharePoint Foundation 2010 is a free download. The only license required to use the product is the Windows Server operating system license. SharePoint Foundation 2010 provides the basic SharePoint features, but it is missing such features as social tagging, My Content, My Profile, enterprise wikis, Secure Store Service, and web analytics.

SharePoint Server 2010 Standard Edition adds the features missing in SharePoint Foundation 2010 (social tagging, My Content, My Profile, enterprise wikis, Secure Store Service, and web analytics) and additional features. It is the entry-level licensed SharePoint product for businesses and organizations; however, SharePoint Server 2010 Standard Edition still lacks some features, such as Visio Services, InfoPath Forms Services, Excel Services, and Access Services.

To get the full feature set, the SharePoint Server 2010 Enterprise Edition must be purchased. The Enterprise Edition includes all the features of the SharePoint Server 2010 Standard Edition as well as the missing features referenced in the preceding paragraph.

SharePoint Server 2010 for Internet Sites can be purchased as either a Standard Edition or Enterprise Edition license. If you require the full feature set for an Internet-facing website, you will need the SharePoint Server 2010 for Internet Sites, Enterprise license. The SharePoint Server 2010 for Internet Sites license allows for deployment of SharePoint for Internet websites, but only for a single domain with subdomains. For each additional domain set, you will have to purchase an additional license. An unlimited number of clients may access a SharePoint site hosted using the for Internet Sites licenses.

For more information about licensing, visit the Licensing Q&A page at `http://sharepoint.microsoft.com/en-us/buy/Pages/Licensing-Details.aspx`. The questions answered on this page are among the licensing questions I am most frequently asked at SharePoint planning meetings.

Table 1.1 lists the three core editions of SharePoint and significant highlights related to each edition.

TABLE 1.1 SharePoint 2010 Core Editions and Important Facts

SharePoint 2010 Edition	Licensing	Important Facts
Foundation	Windows Server must be licensed; SQL Server Standard Edition is recommended (SQL Server Express Edition may be used for small-scale deployments); Foundation Edition license is free.	Provides a collaboration and content-management platform. Web-based applications may be built and customized atop this platform. Is useful for small businesses and departmental deployments.
Standard	Windows Server must be licensed; SQL Server Standard or Enterprise Edition is recommended; SharePoint Server 2010 must be licensed.	Provides all of the capabilities of the Foundation Edition. Supports search capabilities. Supports My Sites and user profiles. Supports social tagging. Is useful for medium to large businesses and smaller deployments demanding the features provided by this edition.
Enterprise	Windows Server must be licensed; SQL Server Enterprise Edition is recommended; SharePoint Server 2010 must be licensed.	Provides all of the capabilities of the Foundation and Standard Editions. Supports Business Intelligence components such as Access Services and Excel Services. Supports PerformancePoint services. Is useful for large businesses and smaller deployments demanding the features provided by this edition.

Features by Edition

One of the most important decisions you will make when implementing SharePoint 2010 is which edition to install. You cannot make this decision without considering the features offered by each edition, and this section provides the rather lengthy list of features offered by the SharePoint product line.

First, the SharePoint Foundation 2010 Edition features are included with every edition of SharePoint. The following list of SharePoint Foundation 2010 features shows just how powerful the product is

- Accessibility
- Blogs
- Browser-based Customizations
- Business Connectivity Services
- Business Data Connectivity Service
- Claims-Based Authentication
- Client Object Model (OM)
- Configuration Wizards
- Connections to Microsoft Office Clients
- Connections to Office Communication Server and Exchange
- Cross-Browser Support
- Developer Dashboard
- Discussions
- Event Receivers
- External Data Column
- External Lists
- High-Availability Architecture
- Improved Backup and Restore
- Improved Setup and Configuration
- Language Integrated Query (LINQ) for SharePoint
- Large List Scalability and Management
- Managed Accounts
- Mobile Connectivity
- Multilingual User Interface
- Multi-Tenancy
- Out-of-the-Box Web Parts
- Patch Management
- Permissions Management
- Photos and Presence
- Quota Templates
- Read-Only Database Support
- Remote Blob Storage (SQL Feature)
- REST and ATOM Data Feeds
- Ribbon and Dialog Framework

- Sandboxed Solutions
- SharePoint Designer
- SharePoint Health Analyzer
- SharePoint Lists
- SharePoint Ribbon
- SharePoint Service Architecture
- SharePoint Timer Jobs
- SharePoint Workspace
- Silverlight Web Part
- Site Search
- Solution Packages
- Streamlined Central Administration
- Support for Office Web Apps
- Unattached Content Database Recovery
- Usage Reporting and Logging
- Visual Studio 2010 SharePoint Developer Tools
- Visual Upgrade
- Web Parts
- Wikis
- Windows 7 Support
- Windows PowerShell Support
- Workflow
- Workflow Models

In addition to the preceding list of features, SharePoint Server 2010 Standard Edition adds the following features:

- Ask Me About
- Audience Targeting
- Basic Sorting
- Best Bets
- Business Connectivity Services Profile Page
- Click Through Relevancy
- Colleague Suggestions
- Colleagues Network
- Compliance Everywhere

- Content Organizer
- Document Sets
- Duplicate Detection
- Enterprise Scale Search
- Enterprise Wikis
- Federated Search
- Improved Governance
- Keyword Suggestions
- Managed Metadata Service
- Memberships
- Metadata-driven Navigation
- Metadata-driven Refinement
- Mobile Search Experience
- Multistage Disposition
- My Content
- My Newsfeed
- My Profile
- Note Board
- Organization Browser
- People and Expertise Search
- Phonetic and Nickname Search
- Query Suggestions, “Did You Mean?”, and Related Queries
- Ratings
- Recent Activities
- Recently Authored Content
- Relevancy Tuning
- Rich Media Management
- Search Scopes
- Secure Store Service
- Shared Content Types
- SharePoint 2010 Search Connector Framework
- Status Updates
- Tag Clouds
- Tag Profiles

- Tags
- Tags and Notes Tool
- Unique Document IDs
- Web Analytics
- Windows 7 Search
- Word Automation Services
- Workflow Templates

Finally, SharePoint Server 2010 Enterprise Edition includes all of the features of Foundation and Standard, but adds the following features:

- Access Services
- Advanced Content Processing
- Advanced Sorting
- Business Data Integration with the Office Client
- Business Data Web Parts
- Business Intelligence Center
- Business Intelligence Indexing Connector
- Calculated KPIs
- Chart Web Parts
- Contextual Search
- Dashboards
- Data Connection Library
- Decomposition Tree
- Deep Refinement
- Excel Services
- Excel Services and PowerPivot for SharePoint
- Extensible Search Platform
- Extreme Scale Search
- InfoPath Forms Services
- PerformancePoint Services
- Rich Web Indexing
- Similar Results
- Thumbnails and Previews
- Tunable Relevance with Multiple Rank Profiles
- Visio Services
- Visual Best Bets

As a planning exercise, you can go through the preceding three lists and highlight or in some way mark the features you will need for your implementation. If no Enterprise Edition features are marked, the Standard Edition may suffice for your implementation. If no Standard Edition or Enterprise Edition features are marked, the SharePoint Foundation 2010 free license may suffice. Be sure to consider future plans when making this decision. If you will require Enterprise Edition features one or two years in the future, it is probably best to implement this edition from the start of the project.

For more information describing each feature, visit the Microsoft SharePoint Editions Comparison page at `http://sharepoint.microsoft.com/en-us/buy/Pages/Editions-Comparison.aspx`.

Of course, in addition to the features, you must consider the cost of the edition you choose. In smaller organizations, the cost of licensing may be prohibitive and features may be sacrificed in order stay within budget. In such cases, the features you want could potentially be implemented using custom development on top of the SharePoint Foundation 2010 installation; however, the time spent customizing the product to get a simple feature like Access Services (explained in more detail in the "Access Services Makes the Difference" Real World Scenario) can cost hundreds or even thousands of hours.

Real World Scenario

Access Services Makes the Difference

I was involved in a SharePoint 2010 planning project for a small business in central Ohio. They were implementing SharePoint for the first time and had no existing SharePoint infrastructure. New implementations are always fun because you have full flexibility in how and what you implement—as long as the organization budgets for the required edition licenses.

In the beginning, the organization planned to use SharePoint Foundation 2010. At our first meeting I shared with them the differences between the SharePoint 2010 editions so that they could make an educated decision. I do not resell SharePoint licenses in my business. I simply assist organizations in the implementation of the Microsoft products that they license themselves, so I have no motive for encouraging organizations to implement the licensed versions of SharePoint 2010 over the free Foundation version. In fact, my company could make more money (charging by the hour) by customizing the free Foundation version to meet their needs; however, when the required features already exist in either the Standard Edition or Enterprise Edition, I want to what is in the best interest of my client.

As I was reviewing the list of features in the Enterprise Edition, I came to the Access Services feature. Immediately, the IT Director interrupted me and said, "Are you telling

me that we can take our existing Access databases, upgrade them to Access 2010, and then publish them into the SharePoint site so that other users can access them and manage the data in them?" I asked him if he would like a demonstration and he said that he would. I booted up my SharePoint Server 2010 Enterprise Edition virtual machine, took a copy of one of their Access 2007 databases, and opened it in Access 2010. Next, I published the database into the SharePoint server and then accessed it within the web browser. Needless to say, this simple demonstration caused the organization to choose the Enterprise Edition of SharePoint Server 2010.

In this scenario, the organization estimated that they had more than 60 Access databases they wanted to import into the SharePoint sites. In fact, they had been considering converting all of their Access databases to SQL Server and creating custom web applications to access the data. With SharePoint Foundation 2010, this more complex and time-consuming process would have been the only option. With SharePoint Server 2010 Enterprise Edition, the process was simpler and took far less time. In fact, the organization had all of their databases up and running through SharePoint 2010 Access Services within three weeks of implementing the SharePoint product.

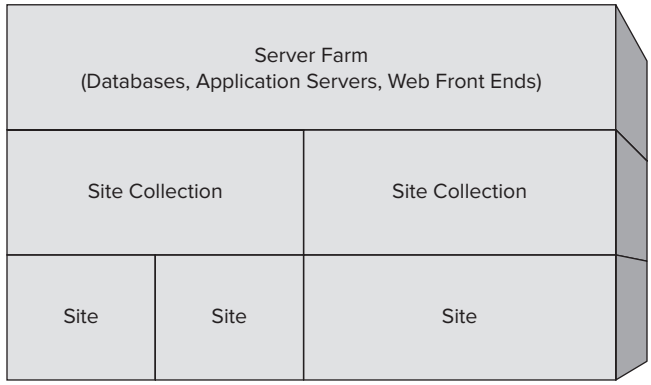
In larger organizations, converting the Access databases to a SQL Server database application may be preferred. The reason is simple: larger organizations tend to use larger databases. Smaller organizations, however, often work with several small Access databases, and the ability to easily centralize these databases through SharePoint is phenomenal.

Understanding the SharePoint Logical Architecture

SharePoint 2010 deployment planning involves the creation of a logical architecture, which is also called a logical taxonomy, and a physical architecture. The SharePoint administrator should be involved in the planning of these architectures and will hopefully be leading the project. Both architectures are designed very early on in the SharePoint deployment project, and the rest of the project (the actual development, testing, and installation of the production environment) will depend heavily on these architectures. The goal is to create a SharePoint 2010 production environment that meets the needs of your users and allows them to work as efficiently as possible. A production environment or production system, in Information Technology (IT) terms, is really just an installed system that users utilize for real business activity.

The logical architecture defines the structure of the SharePoint content. It is usually considered to be synonymous with the information architecture (IA). IA is usually referenced in the context of websites. SharePoint 2010 is used to implement such websites, so it is important to get the IA right and to get it right from the very beginning of your deployment project. Figure 1.1 shows the logical architecture.

FIGURE 1.1 The SharePoint 2010 logical architecture



The logical architecture includes three elements in a SharePoint 2010 deployment including:

- Server farms
- Sites
- Site collections

All three components are explained in the following sections.

The physical architecture is explained and developed in Chapter 2, "Designing the Physical Architecture." In that chapter, you will learn to plan for the various servers and services that allow the logical architecture to exist. For now, just remember that the logical architecture defines the way SharePoint appears to the users, and the physical architecture defines the actual hardware and software used to implement the logical architecture.

The Server Farm

The server farm is the top-level component in the SharePoint 2010 logical architecture. Figure 1.1 shows the logical architecture of SharePoint 2010. The architecture is considered a logical architecture because the server farm is not attached to a single physical device, although it is a single logical entity. The server farm may be spread across multiple servers, including database servers, application servers, and web frontend servers.

Many organizations will implement a single-server farm and require no further deployments. However, some scenarios require the use of more than one server farm, including these:

- Physically separate data centers or sites that are better optimized by having the entire SharePoint server farm localized
- Security policies that require the separation of data and application management according to strict rules that cannot be implemented in a single-server farm

- Extremely large organizations that demand better performance than can be achieved through single-server farms in such large-scale installations

It is important to understand that all three server types (database, application, and web frontend) can exist as a single physical server or as three or more separate servers. Additional complexity is added in that three or more servers can be used, through virtualization, on a single physical server. This is why the server farm is considered to be a logical concept, and the physical implementation of it (the three server types mentioned here) can vary greatly from organization to organization and from deployment to deployment within an organization. All three server types must run on Windows Server 2008 or Windows Server 2008 R2. The server types and Windows Server 2008 are further explained in the following sections.

The Database Server

The database server stores the databases for both configuration and content in the SharePoint server farm. The configuration database is smaller, usually less than 100 MB, but the Content databases can be several gigabytes in size. SharePoint 2010 supports only SQL Server database servers running SQL Server 2005 or later; however, SQL Server Express Edition may be used for small-scale deployments and testing environments.

SharePoint 2010 is a 64-bit-only product, meaning that a 32-bit version is not available. This is why the database server used by SharePoint 2010 must be running a 64-bit edition of SQL Server. I recommend using SQL Server 2008 Enterprise Edition to achieve the best in performance, scalability, and reliability.

When you're planning SharePoint 2010 databases, one of your key considerations is database size. Although exact sizes can't be known until the details are planned, you can determine relative size. For example, the SharePoint Configuration database for a server farm will be between 40 MB and 45 MB right after installation and creation of the first site collection and site. This is a small database compared to Content databases. The following databases and their relative sizes must be considered when planning a SharePoint Foundation 2010 deployment:

Configuration The Configuration database contains information about the other SharePoint databases; the IIS websites and web applications; trusted solutions; Web Part packages; site templates; and web application and farm settings for SharePoint 2010 products, including default quotas and blocked file types. This database is relatively small compared to other SharePoint 2010 databases, and it must be stored on the same database server as the Central Administration Content database. One Configuration database is allowed per server farm, and significant growth is not likely to occur. This is a read-heavy database once production begins, but read operations are infrequent when compared to Content databases.

Central Administration Content The Central Administration (CA) Content database contains the content for the CA site. One CA Content database is allowed in the server farm, and it must be stored on the same database server as the Configuration database. Significant growth is not likely to occur. This is a read-heavy database, but read operations are infrequent.

Content The Content databases are among the most important databases in your SharePoint 2010 deployments. They contain all of the site content. This includes files and documents in document libraries, list data, properties of web parts, audit logs, usernames and rights, and sandboxed solutions. The complete data set for a single site is contained in a single Content database; however, more than one site can be contained in a single content database. If Office Web Applications is in use, the data for this service is also stored in the Content database.

Content databases can be hundreds of gigabytes in size; however, Microsoft recommends limiting the size of Content databases to 200 GB. If a single site is larger than 200 GB, the Content database must also be larger because the entire site is stored in a single Content database. In such scenarios, a database larger than 200 GB must be used, and the storage method must be carefully considered. For example, using SQL Server Enterprise Edition, table partitioning could be used so that part of the database is stored on one RAID array and another part is stored on another RAID array. Such configurations can allow for acceptable performance with very large databases (VLDBs).

Content databases will vary in read and write operations, depending on use. In some implementations, Content databases are write-heavy with extensive data entry operations in lists. In other implementations, the site content remains mostly static and for every change made, hundreds of view or read operations take place. You will have to analyze your environment and optimize the SQL Server database storage for the read-heavy, write-heavy, or balanced read/write operations taking place.

Usage The Usage database is used by the Usage and Health Data Collection service application. It temporarily stores health monitoring and usage data, and it may also be used for reporting and diagnostics. The database is extra-large when compared to other SharePoint 2010 databases, but the size will vary depending on the data retention policy. It is a write-heavy database.

Business Data Connectivity The Business Data Connectivity database is used by the service application of the same name. It stores external content types, which are created by the administrators, and their related objects and properties. It is a small database in relation to other SharePoint 2010 databases. It is a read-heavy database.

Application Registry The Application Registry database is used by the service application of the same name. It stores data required for backward compatibility with the Business Data Connectivity API. This database is used only during an upgrade. Once the upgrade is complete, the database may be safely deleted. It is a small database when compared with other SharePoint 2010 databases, and it is a read-heavy database.

Subscription Settings The Subscription Settings database is used by the Microsoft SharePoint Foundation Subscription Settings service, and it stores features and settings information for hosted customers. The database does not exist by default and must be created in SQL Server if you are deploying a multitenant SharePoint 2010 installation. The database is relatively small compared to other SharePoint 2010 databases, and it is a read-heavy database.

When deploying SharePoint Server 2010 Standard Edition, the SharePoint Foundation 2010 databases must all be considered, and several additional databases must be considered as well. The following databases are added when Standard Edition is used instead of Foundation:

Search Administration The Search Administration database is used by the search service application. It stores the Search application configuration information as well as the access control list for the crawl component of SharePoint 2010. The database is medium-sized in relation to other SharePoint 2010 databases. The database is read-heavy, but read operations are infrequent.

Crawl The Crawl database is used by the search service application, and it stores the state of the crawled data as well as the crawl history. The crawl history tracks when the content sources were last crawled for indexing. The database is extra-large in relation to other SharePoint 2010 databases, and it is read-heavy.

Property The Property database is used by the search service application. It stores information associated with the crawled data, such as properties (also called metadata), crawl queues, and history data. The history data includes when the metadata was first discovered (by the crawler) and when it was last updated. The database is from large to extra-large in relation to other SharePoint 2010 databases, and it is a write-heavy database.

Web Analytics Reporting The Web Analytics Reporting database is used by the Web Analytics service application, and it stores aggregated standard report tables; data aggregated by groups of sites, date, and asset metadata; and diagnostics information. The database can be from extra-large to enormous in relation to other SharePoint 2010 databases, and the size varies depending on data retention policies. If the database becomes too large, you may want to consider retaining data for shorter periods of time or archiving the data to a separate reporting server. This database tracks all of the use accesses so you can see what is being used on your SharePoint sites. Because the Web Analytics service application can take advantage of a SQL Server Enterprise Edition feature called table partitioning, the SQL Server Enterprise Edition should be used to store this database.

Web Analytics Staging The Web Analytics Staging database is used by the Web Analytics service application for storage of unaggregated data, asset metadata, and queued batch data. The database is medium-sized in relation to other SharePoint 2010 databases.

State The State database is used by the State, InfoPath Forms Services, and Visio Services service applications. It stores temporary state information for these service applications, as well as for the chart web part. The database size is medium to large in relation to other SharePoint 2010 databases. It is a slightly read-heavy database with moderate write operations.

Profile The Profile database is used by the User Profile service application, and it stores and manages user information and data. The database is medium to large in relation to other SharePoint 2010 databases. It is a read-heavy database.

Synchronization The Synchronization database is used by the User Profile service application. It stores configuration and staging data for use when profile information is synchronized with Active Directory Domain Services (AD DS). This is a medium to large

database when compared to other SharePoint 2010 databases. The size of the database will depend on the number of users and groups and the ratio of users to groups. This is a balanced read/write database.

Social Tagging The Social Tagging database is used by the User Profile and Metadata Management service applications. The database stores social tags and notes created by users along with the associated URLs. Depending on the number of tags, the database varies greatly in size. In an environment with heavy use of social tagging, the database can be extra large in relation to other SharePoint 2010 databases. This is a read-heavy database.

Managed Metadata Service The Managed Metadata Service database is used by the service application of the same name. It stores managed metadata and syndicated content types for the server farm. The database is medium-sized relative to other SharePoint 2010 databases. It is a read-heavy database.

Secure Store The Secure Store database is used by the Secure Store service application, and it stores credentials such as account names and passwords. It is a relatively small database. For security reasons, the Secure Store database should be placed on a separate database instance with limited access (allow only one administrator to access the database instance).

When SharePoint Server 2010 Enterprise Edition is used, all of the databases included in SharePoint Standard and Foundation Editions must be considered and two additional databases are used:

Word Automation Services The Word Automation Services database is used by the Word Automation Services service application. It stores information about pending and completed document conversion processes. This database is relatively small compared to other SharePoint databases and significant growth is unlikely.

PerformancePoint The PerformancePoint database stores temporary objects and permanent user comments and settings. The database is relatively small compared to other SharePoint databases. This is a read-heavy database, so it should be storage optimized for read operations.

Because of the large number of databases involved in an Enterprise Edition deployment, it is common to implement more than one SQL server. Chapter 2 provides more information about sizing and configuring SQL Server database servers and databases for SharePoint 2010 deployments.

The Application Server

The second server type at the server-farm level is the application server. The application server runs the service applications used by the SharePoint sites within the server farm. Multiple application servers are supported and may be used for performance improvements or for fault tolerance. Service applications and application servers are covered in more detail in Chapter 8, “Planning Service Applications.”

The Web Frontend Server

The final server type used in the server farm is the Web Front End (WFE) server. The WFE server provides the actual websites that users see when using the SharePoint 2010 services.

The WFE servers run Internet Information Services (IIS) as the web server software. IIS serves up the ASP .NET web pages that comprise the SharePoint sites. It also drives the engine used for uploading and downloading documents to and from document libraries. In the end, IIS does most of the actual processing work that delivers content to users.

In Chapter 2, the WFE server is discussed more from a physical implementation standpoint. It is also discussed in Chapter 4 from the perspective of farm deployment planning.

Windows Server 2008 and Active Directory Domain Services

Of course, the database servers, application servers, and WFE servers have to run on an operating system and that operating system is Windows Server 2008 or Windows Server 2008 R2 for production environments. If you choose to use Windows Server 2008, you will need to apply service pack 2 (SP2) for compatibility with SharePoint 2010. Windows Server 2008 R2 may require hotfixes (small patches) to be compatible with SharePoint 2010 as well.

When installing the RTM release of SharePoint 2010 on Windows Server 2008 R2 RTM, you will need to apply the hotfixes referenced in knowledge base articles 160770 and 166231, which can be downloaded from `http://go.microsoft.com/fwlink/?linkID=160770` and `http://go.microsoft.com/fwlink/?linkID=166231`, respectively.

The Windows server must be running as a 64-bit operating system. Windows Server 2008 comes in either a 32-bit or 64-bit installation, so you must choose the 64-bit version and install it on 64-bit hardware. Windows Server 2008 R2 is available only in 64-bit editions so this should cause no problems in deployment. However, it is important to make sure that your virtual environment supports 64-bit operating systems if you plan to deploy SharePoint through virtualization. Microsoft Hyper-V does support 64-bit operating systems, and VMware's ESX servers also support 64-bit operating systems when deployed on 64-bit hardware.

In addition to using Windows Server 2008 or R2 for your server operating system on your SharePoint servers, you must also be running Microsoft Active Directory Domain Services (AD DS). The AD DS will be running on one or more servers separate from the SharePoint server in most installations. The servers on which you plan to install SharePoint should be members of the AD DS domain for user account and group provisioning. The AD DS domain provides the users and groups that SharePoint uses for authentication and authorization.

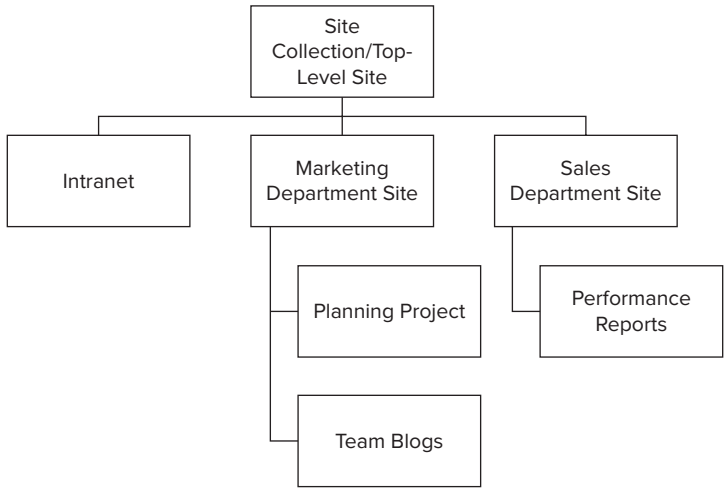
Although you can install SharePoint 2010 on Windows Vista or Windows 7, this support is intended only for development and testing and should not be used for production deployments of the SharePoint infrastructure. SharePoint 2010 may be installed on Windows Vista running SP1 or later. For both Windows Vista and Windows 7, the Professional, Enterprise, or Ultimate Editions must be used.

Site Collections and Sites

As shown in Figure 1.1, the next layer under the server farm in the SharePoint logical architecture is the site collection. A single farm may provide more than one site collection. Site collections are really just administration boundaries that provide trickle down or inherited management for the sites contained within the site collection. For example, a site collection administrator is, by default, an administrator of all sites within the collection.

When a site collection is created, a top-level site is also created within that collection. Site collections provide the central location for permissions and rights management. The site collection permission may be overridden at the site and subsite levels, but the permissions start at the site collection and top-level site. Figure 1.2 shows a potential hierarchy from a site collection downward.

FIGURE 1.2 Potential site collection hierarchy



When you create multiple site collections in a server farm, it is important to keep several considerations in mind:

- Site collections are not connected. If you want users to be able to navigate from one site collection to another, you will have to manually create the navigation links.
- Search results come only from the current site collection in which the user is operating.
- When subsites are created in a site collection, they inherit the permissions of the top-level site. Permissions do not cross site collection boundaries and must be manually duplicated in each site collection if desired.
- Each site collection has up to two administrators. One is the primary site collection administrator, and the other is the secondary administrator.

Site collections may include several different kinds of sites, and within sites, subsites may also be used. Going further, within sites are pages, lists, libraries, folders, and documents. Each site and component is further described in the following sections.

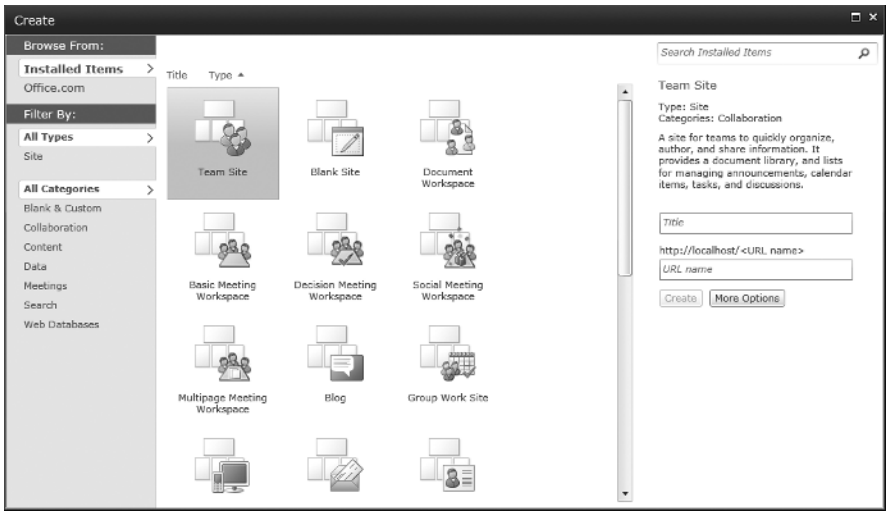
Collaboration Sites

At the heart of SharePoint 2010 is the concept of collaboration. *Collaboration* is defined as the ability to share information and ideas and to make decisions as a team. Many of the SharePoint 2010 site templates are aimed at collaboration. Several features of SharePoint 2010 assist in the collaboration process:

- **Lists:** Lists allow you to share information with other users of the same site. This information can include contacts, product details, item details, sales statistics, and just about anything else you can imagine.
- **Document libraries:** Document libraries allow you to share documents such as Excel workbooks, Word documents, and more.
- **Pages:** SharePoint 2010 pages allow you to create custom pages like traditional website pages. These pages may or may not contain information from lists. They may be static or dynamic, depending on the data sources. Anything you can do on a traditional website can be done on a SharePoint 2010 page.

Figure 1.3 shows the different site templates that are available when creating a new site within SharePoint 2010. Notice all of the collaborative site types in this screenshot along with the other site types. The Team Site, Document Workspace, Basic Meeting Workspace, Decision Meeting Workspace, Social Meeting Workspace, Multipage Meeting Workspace, and Group Work Site are certainly in the collaboration category. However, even the Blog site template can be considered a collaboration template because it allows information to be shared with or about the department or organization.

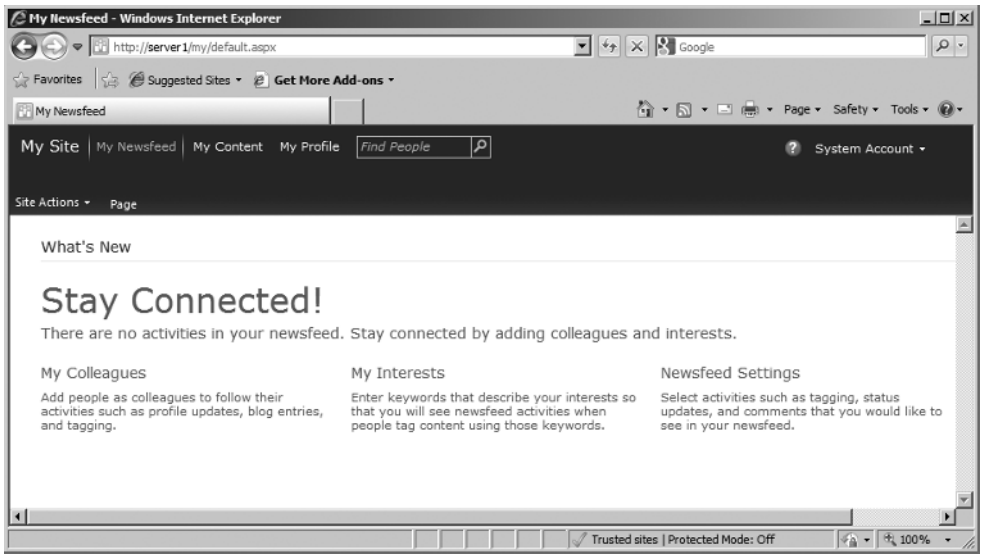
FIGURE 1.3 A subset of the site templates available in SharePoint 2010



My Sites

My Sites provide a place each user can customize for himself or herself. A My Site allows you to list the colleagues with whom you work, your interests, and personal newsfeeds customized to your liking. Figure 1.4 shows the My Site page as it looks by default when first visited by a user.

FIGURE 1.4 The default My Site page in SharePoint 2010


My Newsfeed - Windows Internet Explorer
http://server1/my/default.aspx
Google
Favorites
Suggested Sites
Get More Add-ons
My Newsfeed
Page
Safety
Tools
My Site
My Newsfeed
My Content
My Profile
Find People
System Account
Site Actions
Page
What's New
Stay Connected!
There are no activities in your newsfeed. Stay connected by adding colleagues and interests.
My Colleagues
Add people as colleagues to follow their activities such as profile updates, blog entries, and tagging.
My Interests
Enter keywords that describe your interests so that you will see newsfeed activities when people tag content using those keywords.
Newsfeed Settings
Select activities such as tagging, status updates, and comments that you would like to see in your newsfeed.
Trusted sites | Protected Mode: Off
100%

Users can customize the look-and-feel of their My Site, and they can track colleagues and other information. Colleagues may be added as long as they have a SharePoint profile as well. If an AD DS user exists, but does not have a SharePoint 2010 profile, the user may not be added as a colleague. Figure 1.5 shows the My Site page after some minor customization.

The My Site section of SharePoint also allows a user to configure his or her profile settings. Figure 1.6 shows a user editing his profile.

FIGURE 1.5 A customized My Site page in SharePoint 2010

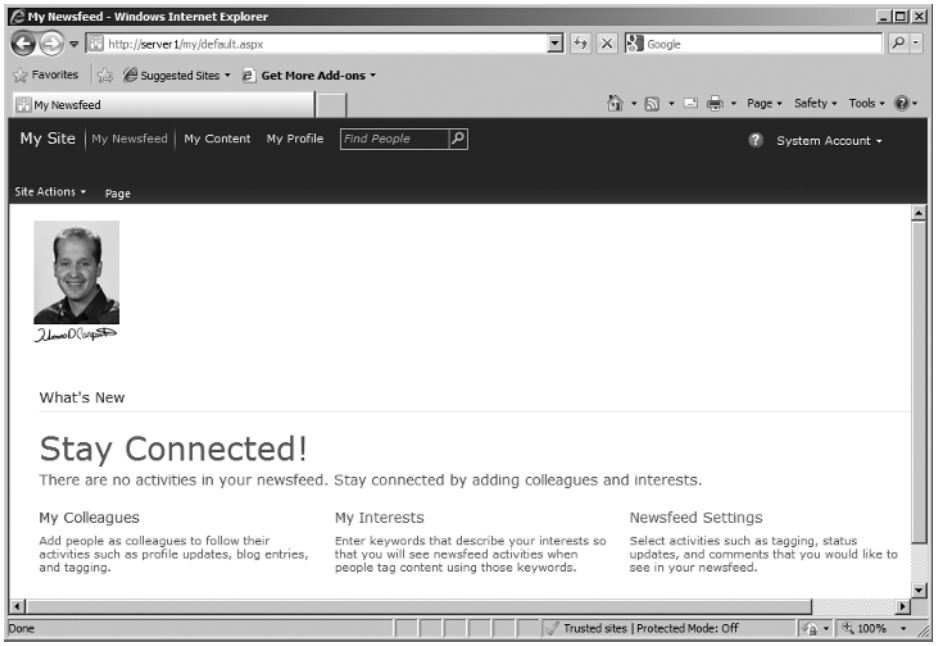
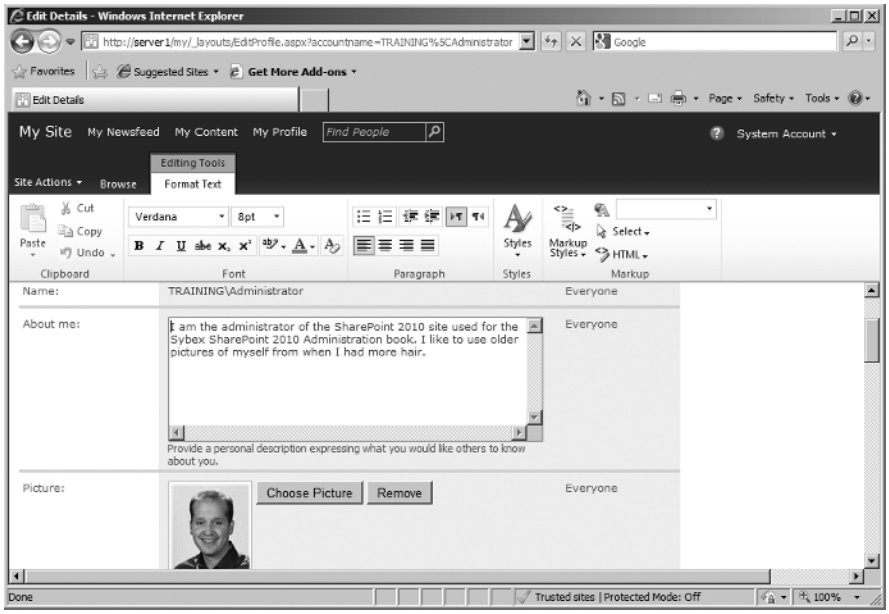

My Newsfeed - Windows Internet Explorer
http://server1/my/default.aspx
Google
Favorites
Suggested Sites
Get More Add-ons
My Newsfeed
Page
Safety
Tools
My Site
My Newsfeed
My Content
My Profile
Find People
System Account
Site Actions
Page
What's New
Stay Connected!
There are no activities in your newsfeed. Stay connected by adding colleagues and interests.
My Colleagues
Add people as colleagues to follow their activities such as profile updates, blog entries, and tagging.
My Interests
Enter keywords that describe your interests so that you will see newsfeed activities when people tag content using those keywords.
Newsfeed Settings
Select activities such as tagging, status updates, and comments that you would like to see in your newsfeed.
Done
Trusted sites | Protected Mode: Off
100%

FIGURE 1.6 A user editing his profile within his My Site



The most important thing to remember is that My Sites provide two primary information purposes: providing information about the users and providing customized information to the users. Each SharePoint user can search the profiles to get publicly available information about others users. Additionally, each SharePoint user may customize her My Site so that she sees information on the site that is most useful to her.

Sub-sites

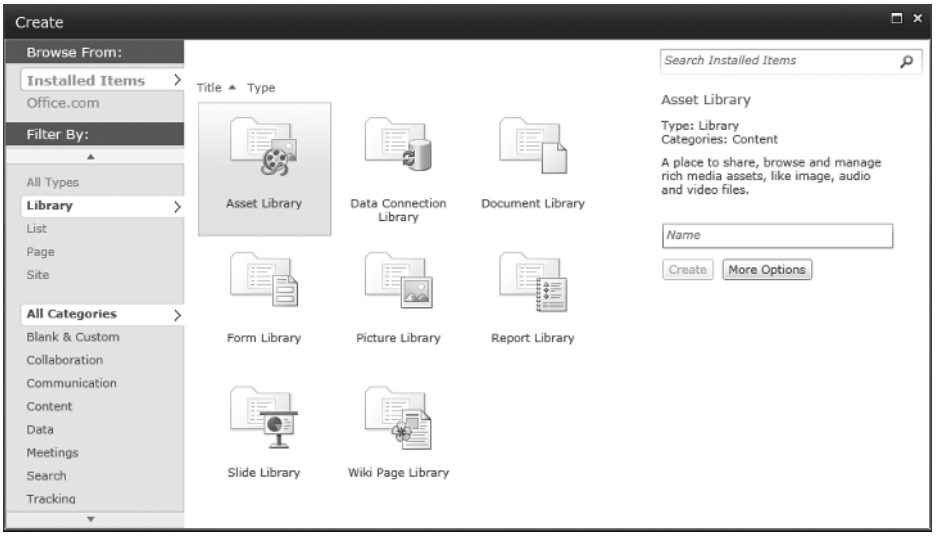
Within a site, subsites may also be created. In fact, by default, all sites that you create are subsites of the top-level site within the site collection. To build a hierarchy like the one shown in Figure 1.3, you simply specify the folder hierarchy on the server during site creation. For example, the intranet site could be at `http://localhost/Intranet` and the Sales department site could be at `http://localhost/Sales`, while the sales performance reports are located at `http://localhost/Sales/PerformanceReports`. The PerformanceReports folder will contain the site for performance reports, but it will still be under the inheritance influence of the Sales folder and the top-level site.

Libraries, Folders, and Document Sets

Within each site you have libraries, folders, and document sets. You should understand and plan for each of these items.

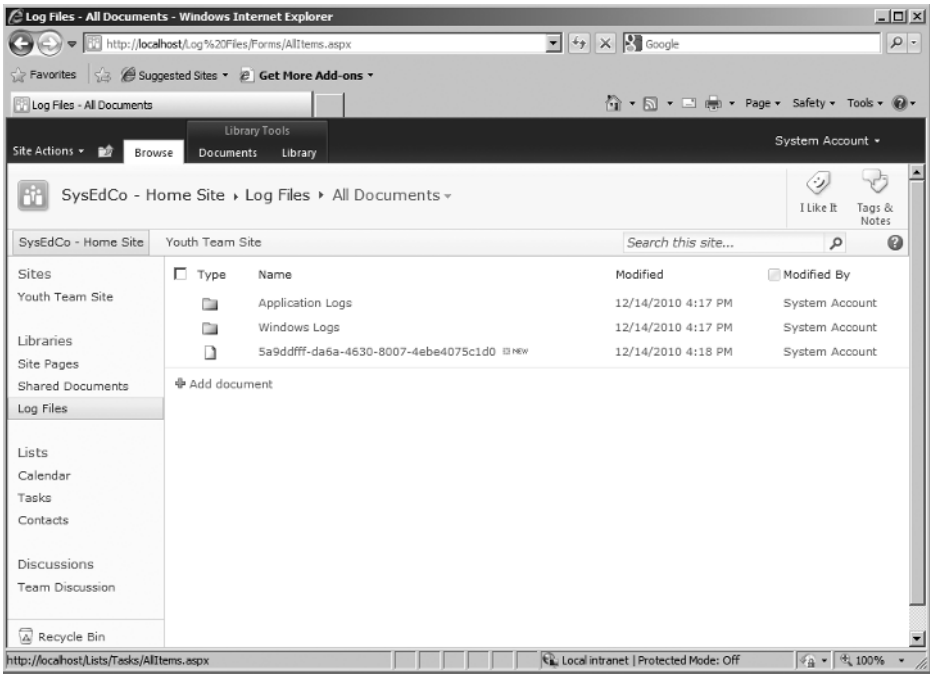
Libraries Libraries are used to store related items for collaboration purposes. As shown in Figure 1.7, multiple library types can be added to a SharePoint 2010 site, including Asset, Data Connection, Document, Form, Picture, Report, Slide, and Wiki Page libraries. The content from the libraries may be used in other areas of the site.

FIGURE 1.7 The new library creation screen showing the various library types in SharePoint 2010



Folders Within libraries, folders can be created for organizational purposes. For each library, you can choose whether folders should be enabled or not. Figure 1.8 shows a document library with folders used for organization. In addition to organizational benefits, much like folders within the operating system, library folders can be assigned permissions so that users who can access the library may not automatically be granted access to all folders within the library.

FIGURE 1.8 A document library that contains folders for organization purposes



Document Sets Document sets are new to SharePoint Server 2010 and exist only in the Standard and Enterprise Editions. They allow you to group multiple documents together for collaboration purposes. The documents may be stored in one or more document libraries. The document set includes a welcome page that displays the contents of the document set and its configuration properties. The document set may be restricted to include specific content types as well.

Because document sets are new in SharePoint Server 2010, you probably will see questions related to this feature on the exam. If you are preparing for the exam, be sure to work through Exercise 1.3 on a default installation of SharePoint Server 2010 Standard or Enterprise Edition.

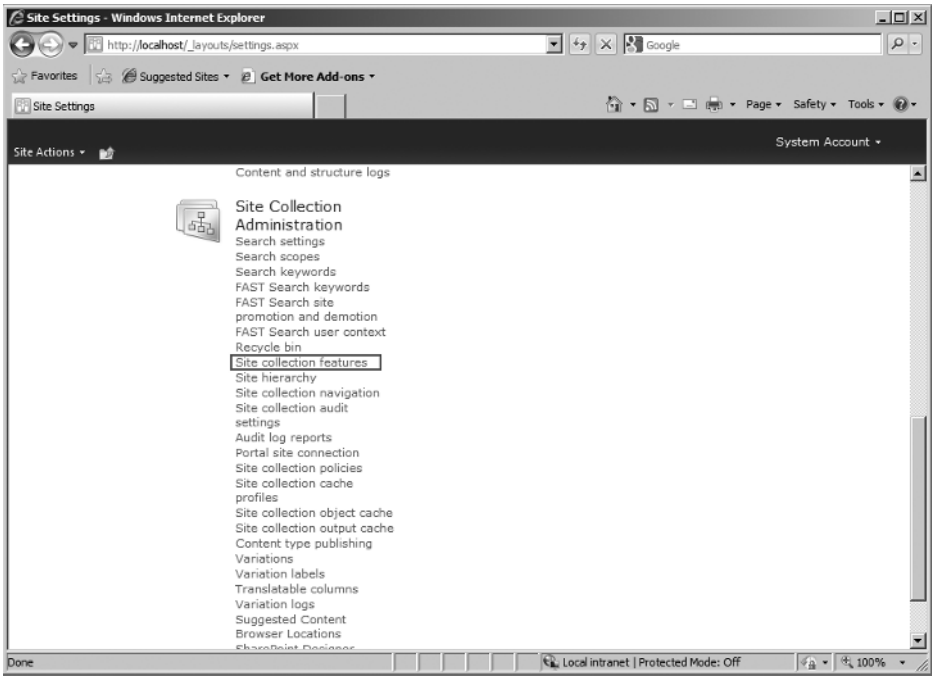
It is very important that you know how to enable document sets. Exercise 1.3 provides instructions for enabling document sets. After working through the exercise, you can spend more time working with the document set configurations if you like.

EXERCISE 1.3

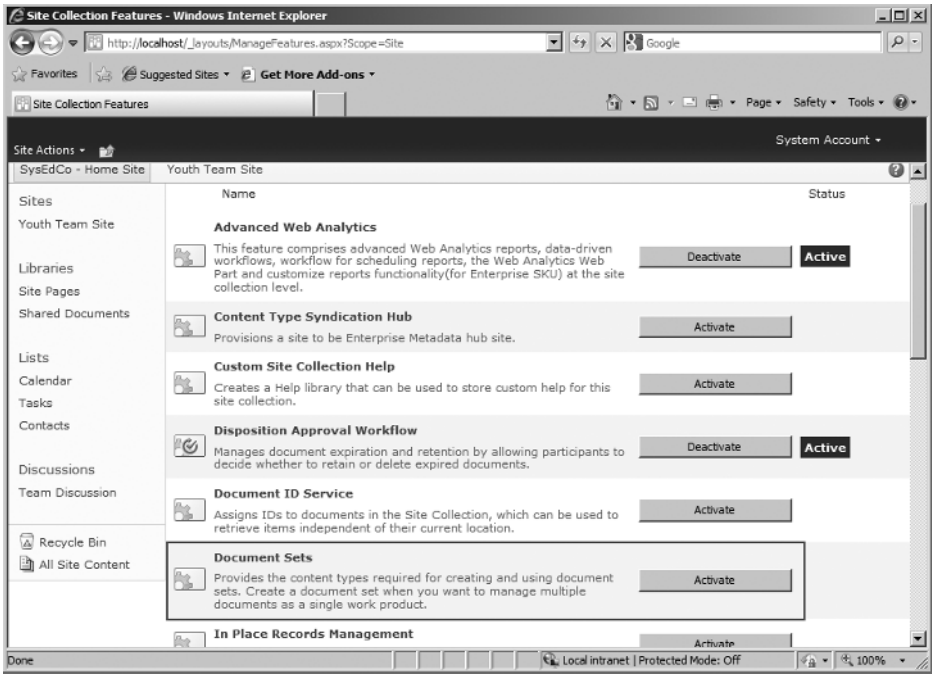
Enabling Document Sets

In this exercise, you will enable document sets at the site-collection level. To perform this exercise, you should have a SharePoint Server 2010 Standard or Enterprise Edition server farm installed with the default options. You should also have a site collection and top-level site created.

1. Open the home page of the top-level site in Internet Explorer.
2. Click the Site Actions link and select Site Setting from the drop-down list.
3. Scroll down, if necessary, and click the Site Collection Features link in the Site Collection Administration category.



4. Scroll down, if necessary, and click the Activate button for the Document Sets feature.


Site Collection Features - Windows Internet Explorer
http://localhost/_layouts/ManageFeatures.aspx?Scope=Site
Favorites
Suggested Sites
Get More Add-ons
Site Collection Features
Page
Safety
Tools
Site Actions
System Account
SysEdCo - Home Site
Youth Team Site
Sites
Youth Team Site
Libraries
Site Pages
Shared Documents
Lists
Calendar
Tasks
Contacts
Discussions
Team Discussion
Recycle Bin
All Site Content
Name
Status
Advanced Web Analytics
This feature comprises advanced Web Analytics reports, data-driven workflows, workflow for scheduling reports, the Web Analytics Web Part and customize reports functionality(for Enterprise SKU) at the site collection level.
Deactivate
Active
Content Type Syndication Hub
Provisions a site to be Enterprise Metadata hub site.
Activate
Custom Site Collection Help
Creates a Help library that can be used to store custom help for this site collection.
Activate
Disposition Approval Workflow
Manages document expiration and retention by allowing participants to decide whether to retain or delete expired documents.
Deactivate
Active
Document ID Service
Assigns IDs to documents in the Site Collection, which can be used to retrieve items independent of their current location.
Activate
Document Sets
Provides the content types required for creating and using document sets. Create a document set when you want to manage multiple documents as a single work product.
Activate
In Place Records Management
Activate
Done
Local intranet | Protected Mode: Off
100%

5. When the process completes, the Site Collection Features page will reload and the status for the Document Sets feature will change to Active.

Once the document sets feature is enabled, you can create document sets in your SharePoint 2010 sites. Document sets are created from within the document library Documents tab view. You must enable content type management for the document library. Exercise 1.4 provides instructions for enabling content type management on a document library.

EXERCISE 1.4

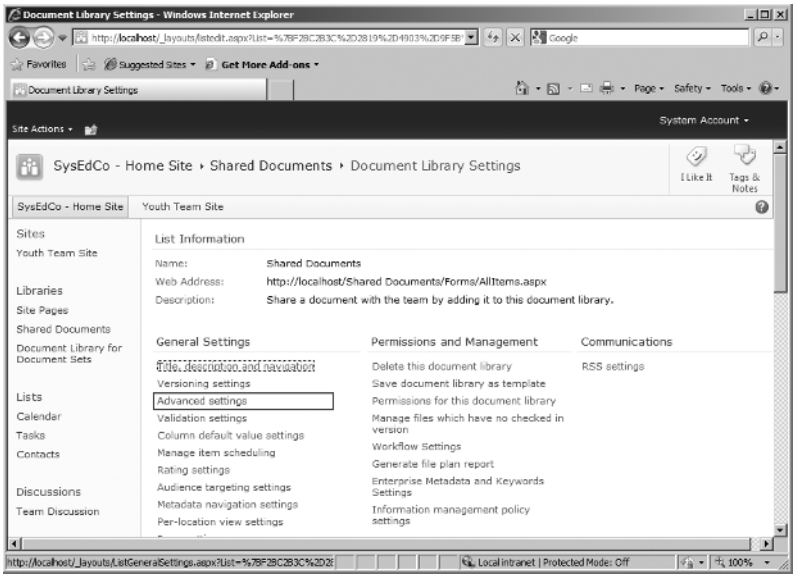
Enabling Content Type Management

In this exercise, you will learn to enable content type management on a document library, which must be performed before you can work with document sets even with the Document Sets feature activated as in Exercise 1.3.

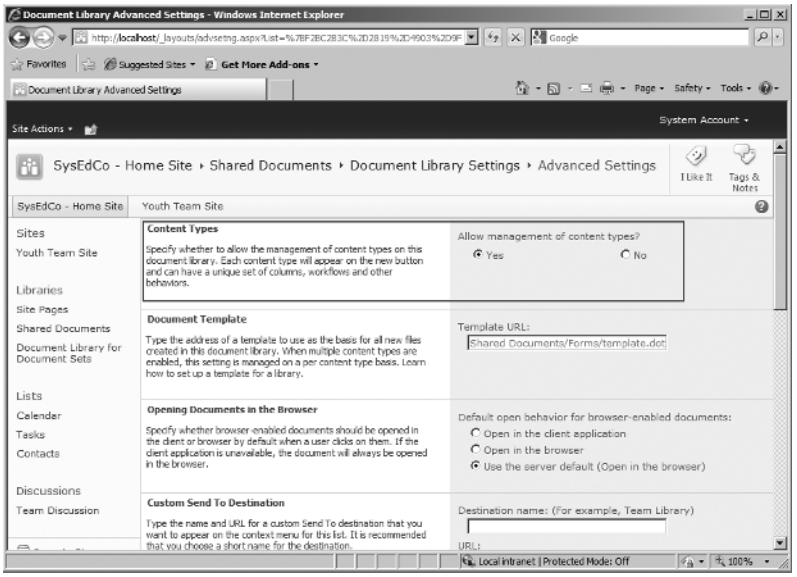
1. Open the home page of the top-level site in Internet Explorer.
2. From the list of Libraries on the left navigation bar, click the document library on which you want to enable content type management.
3. When the document library page loads, select the Library tab on the Ribbon.
4. In the Setting group on the Ribbon, click the Library Settings button.

EXERCISE 1.4 *(continued)*

5. In the General Settings category, click the Advanced Settings link.


Document Library Settings - Windows Internet Explorer
SysEdCo - Home Site ▸ Shared Documents ▸ Document Library Settings
List Information
Name: Shared Documents
Web Address: http://localhost/Shared Documents/Forms/AllItems.aspx
Description: Share a document with the team by adding it to this document library.
General Settings
Permissions and Management
Communications
Versioning settings
Advanced settings
Validation settings
Column default value settings
Manage item scheduling
Rating settings
Audience targeting settings
Metadata navigation settings
Per-location view settings
Delete this document library
Save document library as template
Permissions for this document library
Manage files which have no checked in version
Workflow Settings
Generate file plan report
Enterprise Metadata and Keywords Settings
Information management policy settings
RSS settings

6. Choose Yes for the Content Types Allow Management Of Content Types option.


Document Library Advanced Settings - Windows Internet Explorer
SysEdCo - Home Site ▸ Shared Documents ▸ Document Library Settings ▸ Advanced Settings
Content Types
Specify whether to allow the management of content types on this document library. Each content type will appear on the new button and can have a unique set of columns, workflows and other behaviors.
Allow management of content types?
Yes
No
Document Template
Type the address of a template to use as the basis for all new files created in this document library. When multiple content types are enabled, this setting is managed on a per content type basis. Learn how to set up a template for a library.
Template URL:
Shared Documents/Forms/template.dot
Opening Documents in the Browser
Specify whether browser-enabled documents should be opened in the client or browser by default when a user clicks on them. If the client application is unavailable, the document will always be opened in the browser.
Default open behavior for browser-enabled documents:
Open in the client application
Open in the browser
Use the server default (Open in the browser)
Custom Send To Destination
Type the name and URL for a custom Send To destination that you want to appear on the context menu for this list. It is recommended that you choose a short name for the destination.
Destination name: (For example, Team Library)
URL:

7. Scroll down and click the OK button to save your changes.

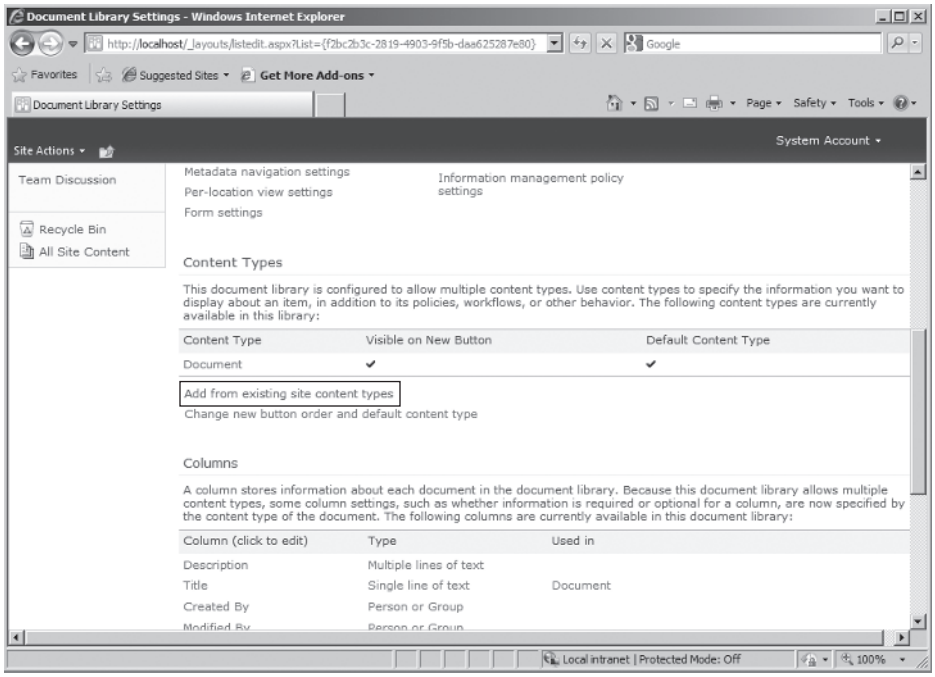
After completing Exercises 1.3 and 1.4, you will be ready to associate the Document Set content type with the document library. This action will enable the creation of document sets in the document library in question. Exercise 1.5 shows you how to add the Document Set content type to the document library.

EXERCISE 1.5

Adding the Document Set Content Type

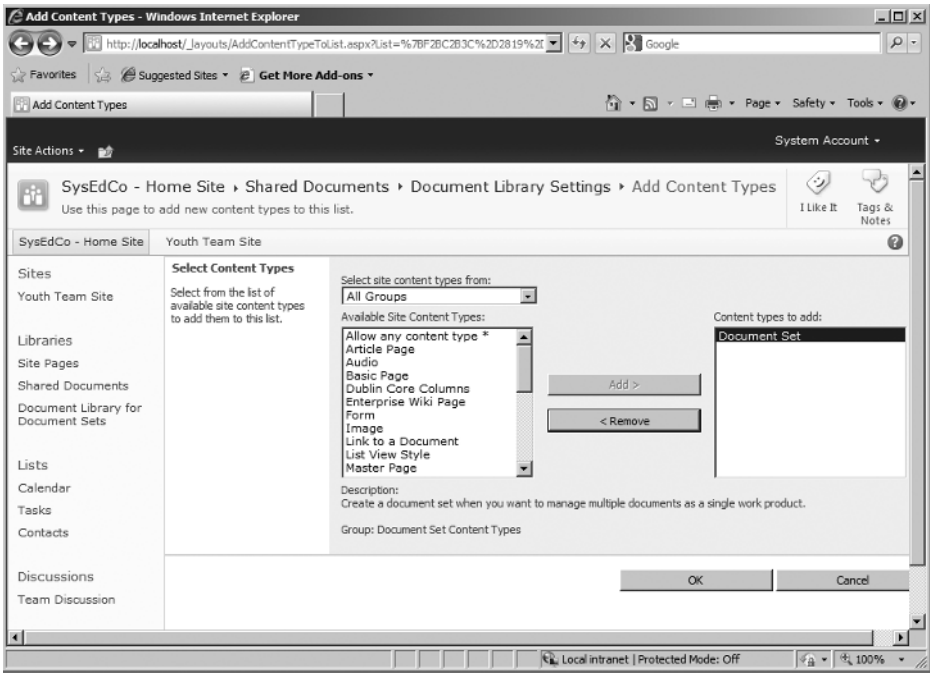
In this exercise, you will add the Document Set content type to a document library so that document sets may finally be created.

1. Open the home page of the top-level site in Internet Explorer.
2. From the list of Libraries on the left navigation bar, click the document library on which you want to enable content type management.
3. When the document library page loads, select the Library tab on the Ribbon.
4. In the Setting group on the Ribbon, click the Library Settings button.
5. Scroll down on the Document Library Settings page until you see the Content Types section. To add a new content type, click the Add From Existing Site Content Types link.


Document Library Settings - Windows Internet Explorer
http://localhost/_layouts/listedit.aspx?List={f2bc2b3c-2819-4903-9f5b-daa625287e80}
Google
Favorites
Suggested Sites
Get More Add-ons
Document Library Settings
Page
Safety
Tools
Site Actions
System Account
Team Discussion
Recycle Bin
All Site Content
Metadata navigation settings
Per-location view settings
Form settings
Information management policy settings
Content Types
This document library is configured to allow multiple content types. Use content types to specify the information you want to display about an item, in addition to its policies, workflows, or other behavior. The following content types are currently available in this library:
Content Type
Visible on New Button
Default Content Type
Document
Add from existing site content types
Change new button order and default content type
Columns
A column stores information about each document in the document library. Because this document library allows multiple content types, some column settings, such as whether information is required or optional for a column, are now specified by the content type of the document. The following columns are currently available in this document library:
Column (click to edit)
Type
Used in
Description
Multiple lines of text
Title
Single line of text
Document
Created By
Person or Group
Local intranet | Protected Mode: Off
100%

EXERCISE 1.5 *(continued)*

6. On the Add Content Types screen, click the Document Set content type and then click the Add button.



7. Click OK to add the content type to the document library.

You can also create new content types based on the Document Set content type. This allows you to customize the content type and limit the types of documents included in the document set.

Items and Pages

So far, you have explored the hierarchy of SharePoint 2010 from a container perspective. The server farm contains site collections. The site collections contain sites. The sites contain subsites, libraries, document sets, and lists. Now it's time to explore in the contents of the libraries, lists, and sites.

Items are stored in lists and libraries. A Word *document* is a document in a document library, but it is also an item. *Items* are database entries in the Content database for the site. For example, you may create a custom list to track the inventory of projectors used in

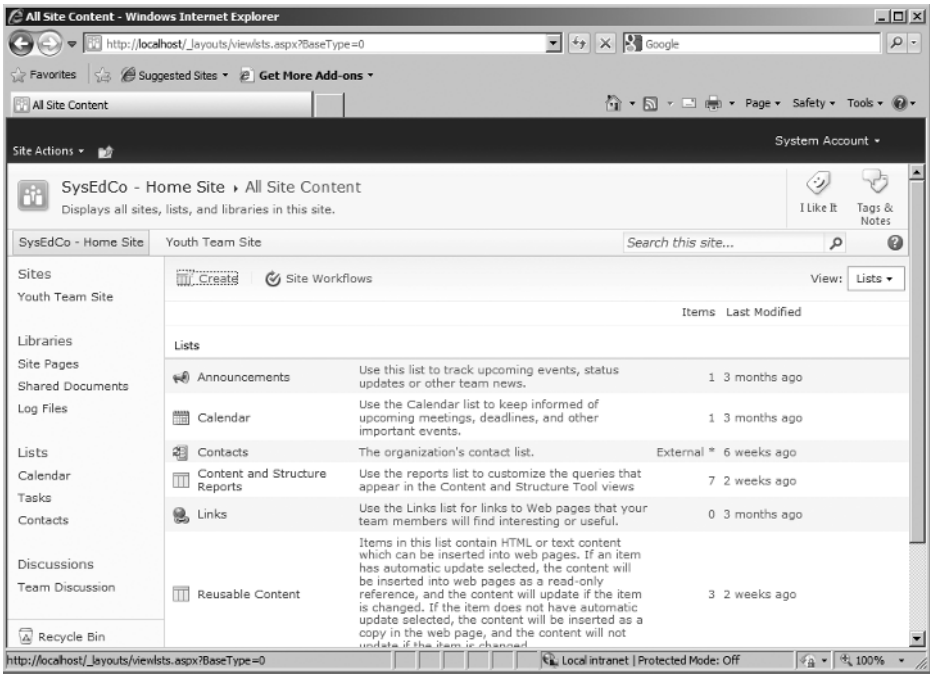
conference rooms at your facility. This list will be stored in the Content database for the site. Exercise 1.6 provides instructions for creating such a list.

EXERCISE 1.6

Creating a Custom Tracking List

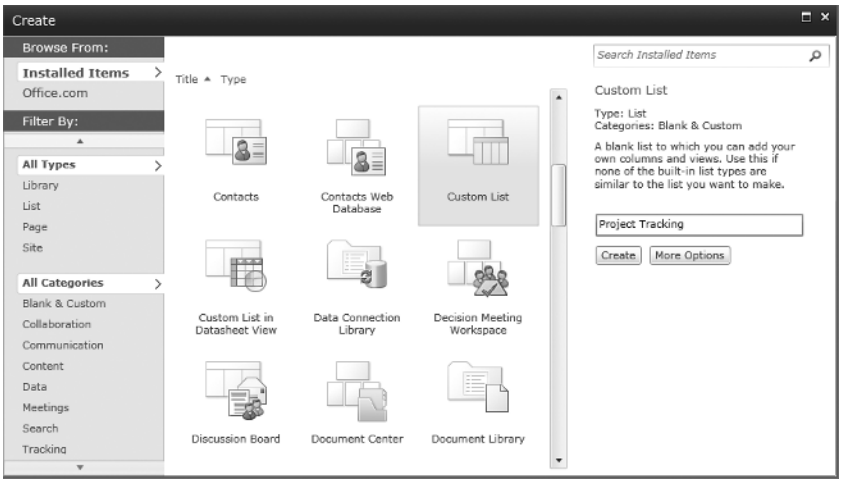
In this exercise, you will create a list for tracking projectors used in conference rooms in your facility. You will track the projector name, current location, and the person using the projector, if applicable.

1. Open the home page of the top-level site in Internet Explorer.
2. On the left navigation bar of the home page, click the Lists item.
3. On the All Site Content page that is displayed, click the Create button.


All Site Content - Windows Internet Explorer
http://localhost/_layouts/viewlsts.aspx?BaseType=0
Favorites
Suggested Sites
Get More Add-ons
All Site Content
Page
Safety
Tools
Site Actions
System Account
SysEdCo - Home Site › All Site Content
Displays all sites, lists, and libraries in this site.
I Like It
Tags & Notes
SysEdCo - Home Site
Youth Team Site
Search this site...
Sites
Youth Team Site
Libraries
Site Pages
Shared Documents
Log Files
Lists
Calendar
Tasks
Contacts
Discussions
Team Discussion
Recycle Bin
Create
Site Workflows
View:
Lists
Items
Last Modified
Lists
Announcements
Use this list to track upcoming events, status updates or other team news.
1 3 months ago
Calendar
Use the Calendar list to keep informed of upcoming meetings, deadlines, and other important events.
1 3 months ago
Contacts
The organization's contact list.
External * 6 weeks ago
Content and Structure Reports
Use the reports list to customize the queries that appear in the Content and Structure Tool views
7 2 weeks ago
Links
Use the Links list for links to Web pages that your team members will find interesting or useful.
0 3 months ago
Reusable Content
Items in this list contain HTML or text content which can be inserted into web pages. If an item has automatic update selected, the content will be inserted into web pages as a read-only reference, and the content will update if the item is changed. If the item does not have automatic update selected, the content will be inserted as a copy in the web page, and the content will not
3 2 weeks ago
http://localhost/_layouts/viewlsts.aspx?BaseType=0
Local intranet | Protected Mode: Off
100%

4. Scroll down in the list and select the Custom List item.
5. In the right sidebar, enter the name **Project Tracking** and click Create to create the custom list.

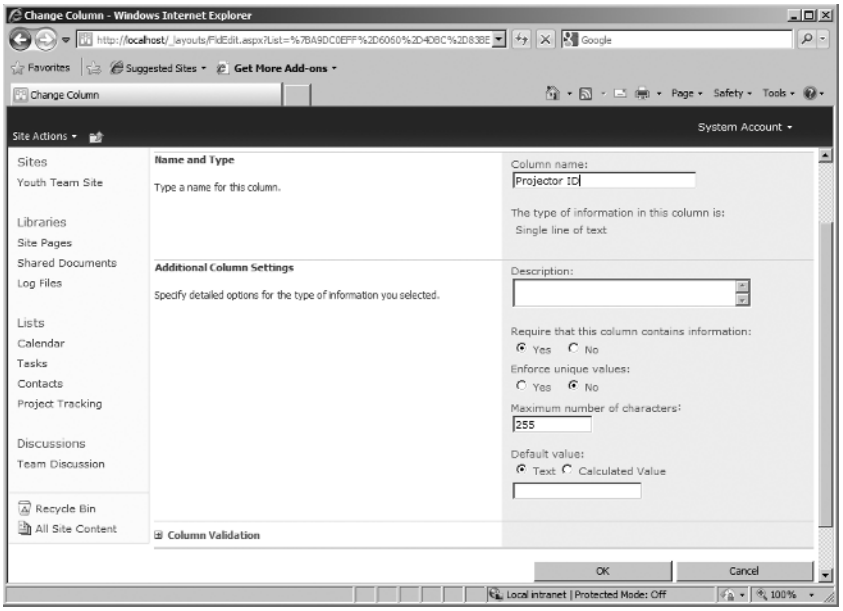
EXERCISE 1.6 *(continued)*



6. You will be taken to the Project Tracking - All Items page. When this page loads, click the List Settings button on the List tab in the Ribbon.

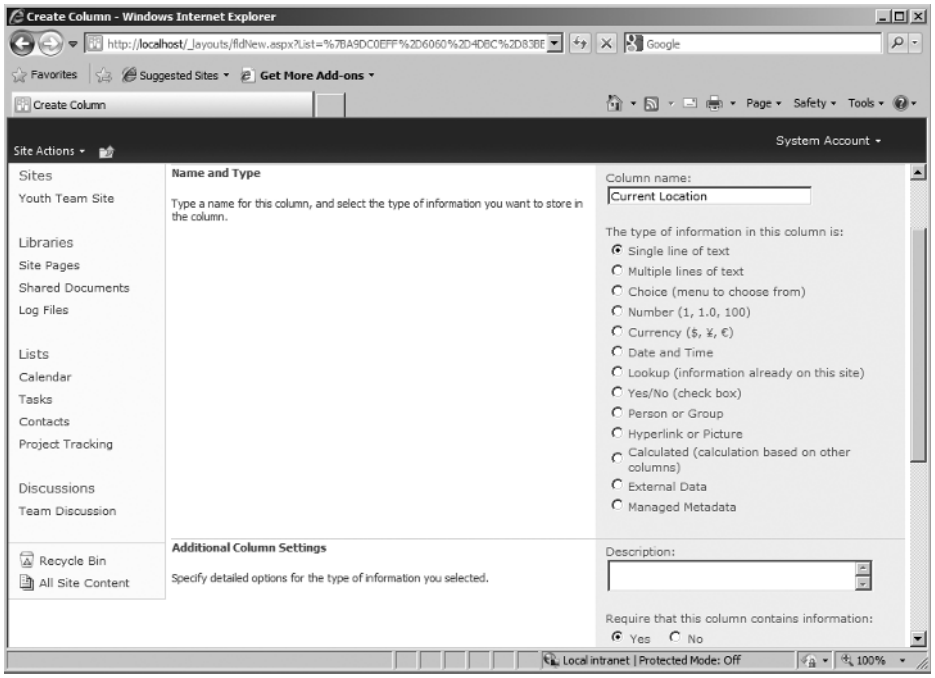
7. Scroll down the page until you see the Columns section. In this section, click the Title link to edit the column.

8. Change the Column Name value to **Projector ID** and click OK.



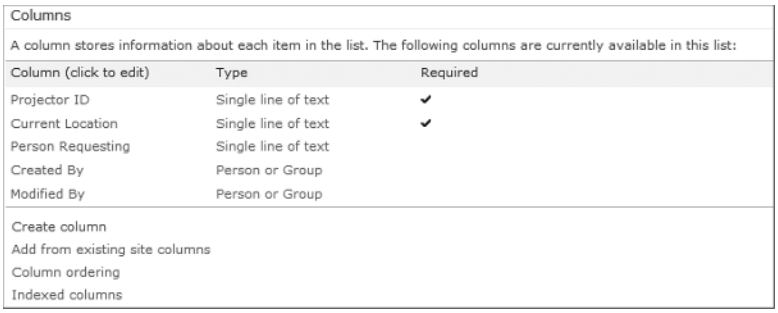
9. You will return to the List Settings page. Scroll down to the Columns section again and click the Create Column link to create a new column.

10. Enter **Current Location** for the Column Name, scroll down the page, select Yes for Require That This Column Contains Information, and then click OK.



11. Repeat steps 9 and 10 to create a column named **Person Requesting**; however, do not select Yes for the Require That This Column contains Information item (because if the projector is in storage, no one is responsible for its use at this time).

12. When properly completed, the Columns section on the List Settings page will look like the following screen:



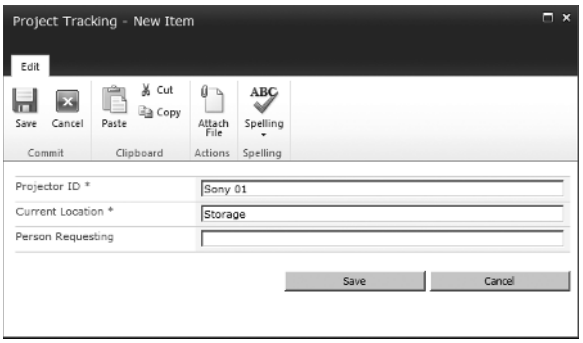
EXERCISE 1.6 *(continued)*

13. Within the Lists category in the left sidebar, click the Project Tracking link to view the custom list.
14. Click the Add New Item link to add an entry to the list.
15. In the Project Tracking - New Item screen, enter the following values for the item:

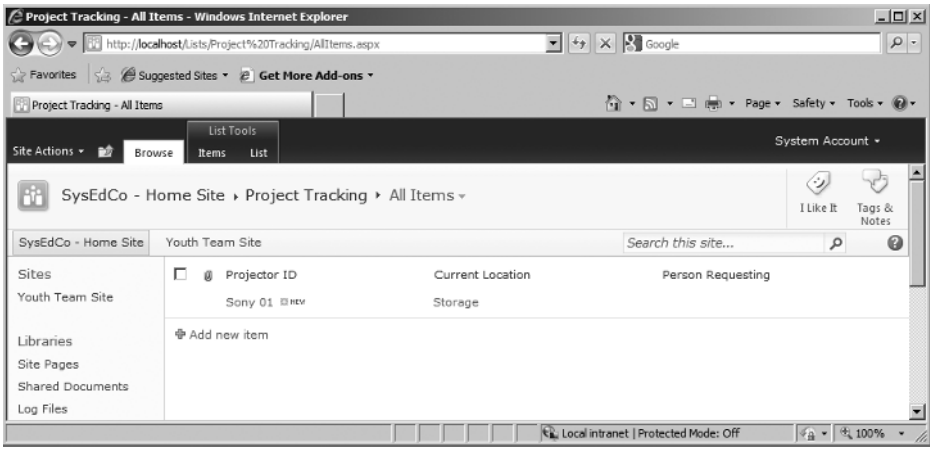
    Projector ID: Sony 01

    Current Location: Storage

    Person Requesting: *{leave empty}*

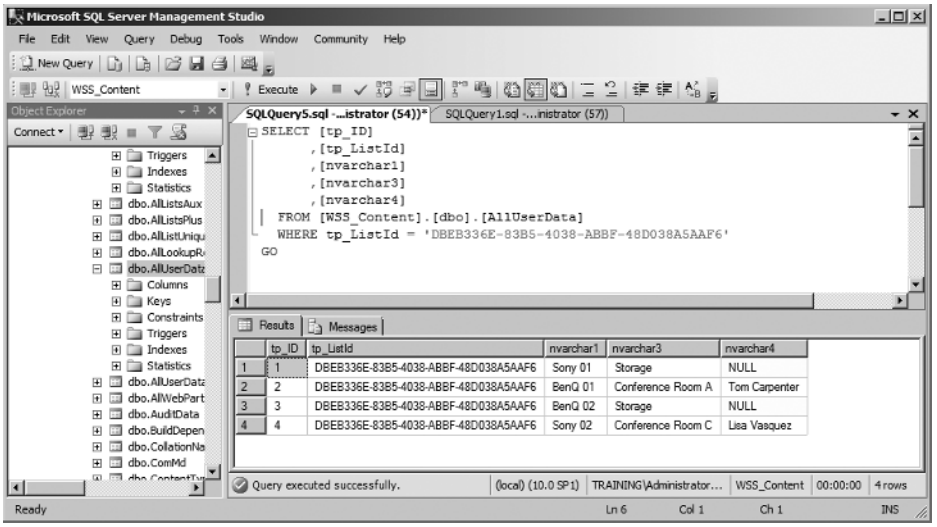


16. Click Save to save the new item into the list in the database.



After creating the custom list in Exercise 1.6, you can add additional items to the list. These items are stored in the SQL Server database on the backend. Figure 1.9 shows a view of the SQL Server database in SQL Server Management Studio after several items have been added to the custom list created in Exercise 1.6.

FIGURE 1.9 Viewing the custom list within SQL Server Management Studio



Typically, you would not use SQL Server Management Studio to directly access data in SharePoint lists; however, it is useful here to actually see the data in the backend database. Directly accessing data, particularly with `INSERT`, `UPDATE`, and `DELETE` T-SQL commands, can cause severe problems for your SharePoint sites and could result in the loss of support from Microsoft.

In addition to items stored in lists, you can create custom pages in the SharePoint sites. Custom pages are stored as items in lists within the Content database. You can then link to these custom pages from the home page of the site or from any other page. Custom pages are useful for delivering static content or custom collections of dynamic content within your SharePoint site.

SharePoint Zones

The final element in the logical hierarchy is the SharePoint zone. A *zone* represents a logical path used to gain access to the sites in the SharePoint web application. Stated as simply as possible, a zone is an IIS website used to access SharePoint web applications. The logical path could be an intranet path, such as `SharePoint.company.local`, or an Internet path, such as `SharePoint.company.com`. Up to five zones may be associated with the web application. All web applications start with the default zone, but the intranet, extranet, Internet, and custom zones may also be used.

Don't be confused by the zone names, such as intranet and extranet; the names are only there as a reference. For example, you could implement a zone using the Internet

name that is never accessed from the Internet. That is not Microsoft's intention, but it could be done. The names are simply there to help you remember why you are using the zone. Therefore, you should use the appropriate name with the most logical source. You may use the extranet zone when you are building a zone to be accessed only by partnering organizations. You may use the Internet zone when building a zone used by public Internet access users who access the site anonymously. What users accessing the site from the Internet zone can see and do can then be further controlled through the Anonymous User Policy in SharePoint 2010. The custom zone is really just there for any use that doesn't fall into the other logical categories. It's not anything special when compared to the other zones, but it has a generic name so you can use it for any purpose.

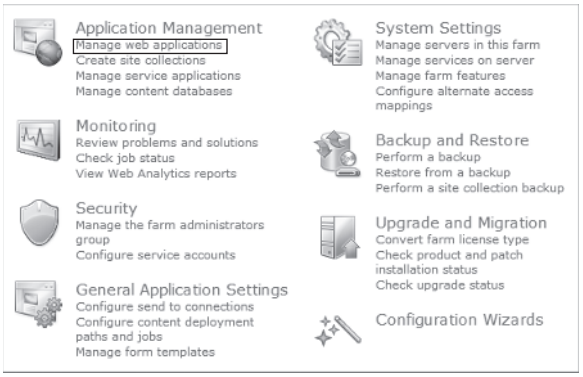
In most cases, multiple zones are used only for the implementation of different authentication methods. If you use the new claims based authentication (CBA) in SharePoint 2010, multiple authentication methods can be used with a single zone. If classic mode authentication is used, each zone is limited to a single authentication method. Additional zones are added by extending the web application. Exercise 1.7 provides instructions for extending a web application for an additional custom zone.

EXERCISE 1.7

Extending a Web Application

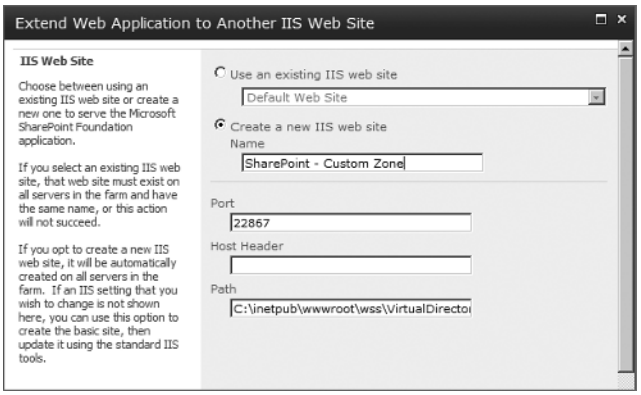
In this exercise, you will extend the default SharePoint - 80 web application to exist in the custom zone as well. You will verify the extension by viewing the authentication providers.

1. Log on to the SharePoint 2010 server as an administrator.
2. Launch SharePoint 2010 Central Administration.
3. In the Application Management group, click Manage Web Applications.



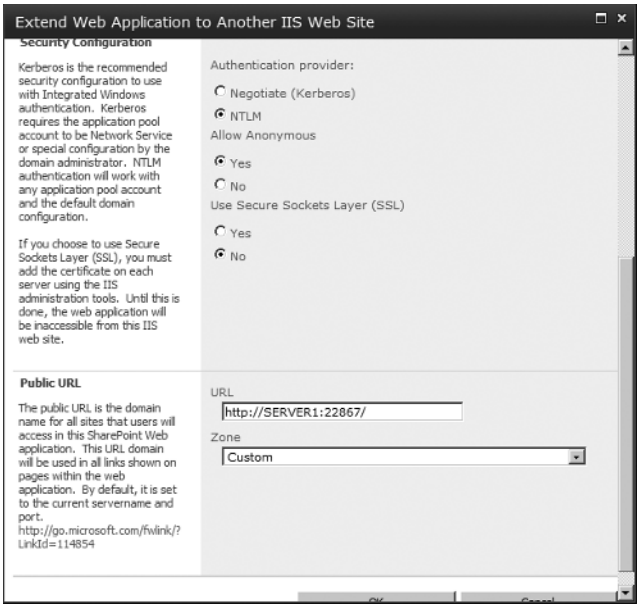
4. Click on the SharePoint - 80 web application to select it, and then click the Extend button on the Ribbon.

5. In the Name field, change the name to **SharePoint - Custom Zone** so that you can easily identify the site at a later time.


Extend Web Application to Another IIS Web Site
IIS Web Site
Choose between using an existing IIS web site or create a new one to serve the Microsoft SharePoint Foundation application.
If you select an existing IIS web site, that web site must exist on all servers in the farm and have the same name, or this action will not succeed.
If you opt to create a new IIS web site, it will be automatically created on all servers in the farm. If an IIS setting that you wish to change is not shown here, you can use this option to create the basic site, then update it using the standard IIS tools.
Use an existing IIS web site
Default Web Site
Create a new IIS web site
Name
SharePoint - Custom Zone
Port
22867
Host Header
Path
C:\inetpub\wwwroot\wss\VirtualDirecto

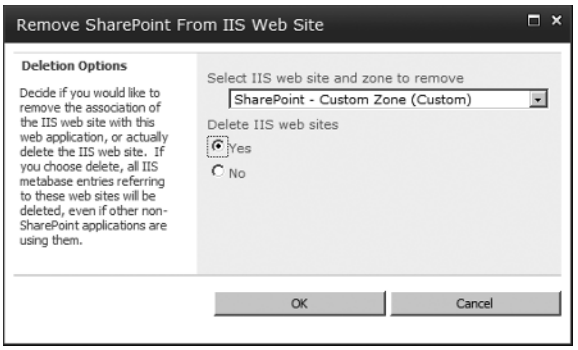
6. Accept the default Port settings and scroll down the page to the Security Configuration section. In this section, change the Allow Anonymous setting to Yes.

7. Scroll further down the page, change the Zone setting to Custom, and then click OK.


Extend Web Application to Another IIS Web Site
Security Configuration
Kerberos is the recommended security configuration to use with Integrated Windows authentication. Kerberos requires the application pool account to be Network Service or special configuration by the domain administrator. NTLM authentication will work with any application pool account and the default domain configuration.
If you choose to use Secure Sockets Layer (SSL), you must add the certificate on each server using the IIS administration tools. Until this is done, the web application will be inaccessible from this IIS web site.
Authentication provider:
Negotiate (Kerberos)
NTLM
Allow Anonymous
Yes
No
Use Secure Sockets Layer (SSL)
Yes
No
Public URL
The public URL is the domain name for all sites that users will access in this SharePoint Web application. This URL domain will be used in all links shown on pages within the web application. By default, it is set to the current servername and port.
http://go.microsoft.com/fwlink/?LinkId=114854
URL
http://SERVER1:22867/
Zone
Custom

After you complete Exercise 1.7, the default site will be accessible to anonymous users and this authentication structure will be applied as the custom zone. In some scenarios, you might want to unextend a web application so that a particular zone is no longer supported. This action is accomplished in the Web Applications Management page of Central Administration using the Delete ➢ Remove SharePoint from IIS Web Site option. Be careful to delete only the extended web application. Figure 1.10 shows the Remove SharePoint from IIS Web Site dialog that would be used to remove the Custom Zone settings enabled in Exercise 1.7.

FIGURE 1.10 Removing a zone or unextending a web application


Remove SharePoint From IIS Web Site
Deletion Options
Decide if you would like to remove the association of the IIS web site with this web application, or actually delete the IIS web site. If you choose delete, all IIS metabase entries referring to these web sites will be deleted, even if other non-SharePoint applications are using them.
Select IIS web site and zone to remove
SharePoint - Custom Zone (Custom)
Delete IIS web sites
Yes
No
OK
Cancel

Designing a Logical Taxonomy

Now that you understand the logical architecture of SharePoint 2010 deployments, you can begin planning the structure and naming convention for it. Remember, this is also called a logical taxonomy and that is how Microsoft references it in the exam objectives for exam 70-668. Don't let the fancy word *taxonomy* confuse you if you're new to information management and information architectures. It means exactly the same thing it does in the field of biology. A taxonomy is a naming and classification structure, usually hierarchical in nature, used to conceptualize and organize complex systems. The logical taxonomy of your SharePoint deployment will simply be the logical architecture or structure you choose to implement. Stated differently, it is the structure of the server farms, site collections, and sites that you choose to deploy.

Site hierarchy planning is an important consideration early in your SharePoint deployment. If the hierarchy is too simple, it may not meet your later information needs. If it is too complex, it may be difficult for your users to navigate.

In most organizations, the following questions must be answered in order to properly design a logical taxonomy:

- Which departments will use the SharePoint server?
- What features of SharePoint will they utilize?
- What security policies may impact the administration or use of the SharePoint infrastructure?
- What, if any, custom development will be performed on the SharePoint servers?
- What is the budget for the project?

Sadly, that last item is often overlooked, but in the real world you cannot simply assume the budget is unlimited. The budget will often constrain your logical design. For example, one department may inform you that they want to use the SharePoint server; however, if they use the server, they will require completely separate administration and security boundaries to the extent that a separate server farm will be required. Because it exists in the real world, this department may simply have to put off using SharePoint, for now, if the budget does not allow for the second server farm. Hardware costs can often be reduced through virtualization, and virtualization may allow you to meet the needs of this department, but licensing costs will still be a factor and may simply make the endeavor too expensive for your organization at this time.

In the logical design process, you should be sure to include the following tasks:

- Build a business team that can work together to plan the SharePoint deployment effectively. This team must have or establish relationships with all departments in the organization so that no department is overlooked.
- Prepare a list of questions for the department heads or the department representatives. These questions should be in business terms and not in technical SharePoint terms that individuals will not understand.
- Focus on the business requirements at this stage to ensure that you build a solution that allows the organization to perform as needed.
- Include both functional and nonfunctional requirements. Functional requirements define actions that the SharePoint installation must be capable of supporting. Nonfunctional requirements define how the system must operate, including considerations such as performance, capacity, security, and so on.
- Determine the budget for the project. This budget should include licensing and hardware costs in every deployment. In some deployments, consulting fees and labor costs may also be required in the budget.
- Document everything. Documentation should begin even as you are building the business team and should continue through every phase of the logical design process. By the end of the process, you will want to more formally finalize the documentation.

To assist you in the planning process, Microsoft provides several planning worksheets at their TechNet website. The worksheets are available to individuals with or without a paid TechNet account at `http://technet.microsoft.com/en-us/library/cc262451.aspx`.

Building a Business Team

The first and most important step in planning a SharePoint 2010 logical design and deployment is the formation of a planning team. The team should include members from several areas of business. At a minimum, the following team members should be selected:

- Stakeholders
- SharePoint administrators
- SharePoint developers

Stakeholders will be most heavily involved during the requirements gathering process and the later testing processes. If they do not have input in the requirements gathering process, you are likely to overlook several important requirements. The stakeholders include business users, management, and IT support staff who do not directly interact with the SharePoint implementation. For example, while the network administrators may never perform actions directly against the SharePoint servers, they manage the network that must be used to access the servers. If the network administrators are not involved in the planning, you will be sure to overlook key factors in the network infrastructure.

The SharePoint administrators and developers should be included on the team for input from two very different perspectives. The first is the perspective of administration, which includes the operational portion of the SharePoint implementation. The administrators will be responsible for backups, security management, feature activation, search administration, external data connections, and any other responsibility that falls in the category of administration. This book is focused primarily on the job role of administration.

The second perspective is that of the developers. The developers are responsible for creating custom features, solutions, and pages. They may not activate these additions in the production environment, but they will be responsible for creating, troubleshooting, and updating them. In small environments, an individual may be responsible for both the development and administration tasks. In larger environments, these duties are typically separated for both efficiency and security reasons. It's more efficient because the individuals can focus their efforts on a smaller subset of knowledge. It's more secure because no one individual is responsible for both the development of new code and the implementation of that code. Separation of duties helps to increase security.

In addition to the key roles of shareholders, SharePoint administrators, and SharePoint developers who should be on the business team, you may consider other roles as well. The following team members may be considered in addition to the three core team member roles:

- **Solution architects:** In the largest organizations, an individual playing the role of solution architect will use the logical design to plan the physical implementation of SharePoint. In smaller organizations, this is the responsibility of the SharePoint administrator.
- **Database experts:** The SharePoint solution depends on a SQL Server database backend. A database expert may be included on the team to ensure that the databases perform as needed. If no such expert is available, this responsibility will fall back to the SharePoint administrator.
- **Active Directory administrators:** SharePoint uses the users and groups from Active Directory (AD) for authentication and authorization in most SharePoint installations.

In the smallest implementations, the SharePoint administrator is likely to be the AD administrator as well. In smaller companies, one or two IT professionals will perform the roles of several dozen professionals in larger companies.

As you can see, the SharePoint administrator has more responsibilities in smaller organizations than in larger organizations. However, even the SharePoint administrator in larger organizations would benefit greatly from understanding all of the parts and pieces that make SharePoint work on the network. These parts include the network itself, DNS, AD, and SQL Server. All of these components are addressed in greater detail in Chapter 2, "Designing the Physical Architecture," and Chapter 3, "Integrating SharePoint with the Network Infrastructure."

Preparing Questions

Once you have the business team assembled, you can begin preparing questions that will help you clearly define business requirements. These questions can be of two types:

- Questions you must answer as a team
- Questions you must ask of the organization

The team questions can be reviewed in a brainstorming meeting format. The team questions should be reviewed and answered before asking questions of the organization. After the organization questions are answered, the team should reconvene to answer any new questions that came out of the organizational questions. Examples of team questions include:

- Why are we implementing SharePoint?
- From what features of SharePoint are we most likely to benefit?
- Which departments will need to use the SharePoint installation immediately?
- Which departments will be brought onto the SharePoint installation over time?
- What custom code do we foresee developing?
- Will we need to purchase any third-party add-ons for the installation?

As you read the preceding list of questions, if you thought that many of these questions should be asked of the organization or derived from discussions with the organization, you were correct. However, by reviewing the questions with the team first, you gain a greater understanding of the issues, and you can determine the best way to ask the questions so that the organization will understand the questions when asked of them.

For example, imagine sending out an email survey to discover how your employees might use the SharePoint servers and asking the question "How do you think you will use the web parts available in SharePoint 2010?" Clearly, the future users will not even know what web parts are much less how they would use them. A better question might be "Would you benefit from the ability to create custom pages and, if so, in what scenarios?" While the latter question might still require some explanation, the question is much easier to understand because the technical jargon of SharePoint has been removed.

During the team meeting, you will want to develop the survey for the organization's employees. This survey is a primary reason for having business users on the team. They can help you make sure the survey is understandable for the business users.

Real World Scenario

Using Video for Simplification

While working with a company in central Ohio, my company came up with a very creative method for performing surveys like those discussed in this section. Instead of sending out simple one-sentence questions, we created a mandatory online video solution to ask the questions. The employees were given a five-dollar gift certificate to a popular local lunch place for watching the video and answering the questions.

Each question was developed into a 60 to 90 second video. In the video, the question was asked and explanations were given. When appropriate, quick demonstrations of features were even performed. After each video, the user was presented with a page of 1 to 3 questions they could answer. They were required to answer at least 50 percent of the questions to get the lunch certificate.

Yes, it was bribery and yes, there were likely those who really didn't give it much thought; however, that didn't matter to us because the questions could be answered in two ways. Each question had a yes, no, or maybe response, but each question also had an area for the users to type in their own answers. The vast majority of users typed in ideas that were both useful for gathering requirements and creative for improving the product we were installing.

The benefit of the video method was two-fold. First, it allowed us to better explain the system and the questions we were asking. Second, it whetted the users' appetites so that they really wanted the system. Breaking down resistance to change in technology is never an easy thing, and by showing them the system and gathering their input for it, we accomplished both tasks simultaneously.

Defining Business Requirements

When you have interviewed stakeholders, gathered survey results, and performed team brainstorming, you are ready to define the business requirements. The most important priority in your SharePoint planning should be meeting business requirements. A well-implemented technology that fails to meet the business demands is really nothing more than an expensive way to heat your facility. Let the heating system do its job and make sure the SharePoint servers do theirs by clearly defining business requirements.

Requirements analysis is a complex topic by itself, which could occupy hundreds of pages. For more information on requirements analysis, consider reading the book *How to Cheat at IT Project Management* by Susan Snedaker (Syngress Press, 2005).

Requirements analysis can be defined as the process of discovering a project's requirements. A *requirement* is anything, physical or logical, that must be provided by the product of the project in order for the project to be considered successful. Simply stated, requirements are the things you must achieve at the completion of the implementation of your SharePoint 2010 deployment. The *product of a project* is defined as the result or outcome of the project. It is what the project gives you. The requirements, then, are those things that the product must provide in order for the project to be deemed successful.

Business requirements come from two primary sources: internal business requirements and external business requirements. Internal requirements will be based on organizational objectives and policies such as security policies, employment policies, and so on. External requirements will be based on regulations from local regulatory bodies such as federal and local governments and their agencies.

Business requirements can be determined through several methods. The first is the user surveys discussed in the preceding section. Additional methods include:

- Interviews with the project sponsor
- Focus groups
- Business process analysis

Regardless of the method used to gather the information, it is the responsibility of the project manager and the team to ensure that the business requirements are well established.

Out of the business requirements will come the functional and nonfunctional requirements. Functional requirements define the capabilities that a system or its components must provide. For example, the following is a list of functional requirements:

- Users must be able to store documents in the SharePoint 2010 server farm.
- Users must be able to create custom My Sites.
- Users must be able to customize their starting portal page with information they want to see.
- Administrators must be able to schedule backups.

Nonfunctional requirements define how the system must behave. Nonfunctional planning items include:

- Security
- Performance
- Availability
- Manageability
- Capacity

- Scalability
- Interoperability
- Business continuity

The major difference between functional and nonfunctional requirements is that functional requirements specify the "what" and nonfunctional requirements specify the "how." While some crossover may exist, this is the primary point of separation.

Defining the Budget

The budget will be based on hardware purchases, software licenses, and man hours. If you do not bring in any consultants for the implementation and your organization does not track the cost of employee time against project budget, you may disregard man hours. However, hardware and software costs should always be considered.

The budget can be developed in two ways. The first method is called bottom-up budgeting. With *bottom-up budgeting,* you determine what you want to do, how much it will cost, and then gain approval for the budget required. This is the preferred budgeting method, but it is not necessarily the most common.

Top-down budgeting indicates that you are given a budget and you must implement the technology within that budget. This is the more common method of deployment. In some organizations, a fixed IT budget is assigned and something like a SharePoint deployment will be taken out of that budget. In these scenarios, you often see a mixture of bottom up and top down. It's bottom up in the feasibility stage (you tell the IT director what it would cost to implement the SharePoint farm or farms you need), and then it becomes top-down in the implementation stage (the IT director tells you how much you actually have and it's usually less than the bottom-up method determined). Although it is important to be prepared for these politics, you shouldn't let them unduly frustrate you. It is just the way business is done, and there are many justifiable factors that result in this reality. If you are doing the administration and implementation, you get to discover creative ways to make it happen within the budget.

Regardless of the method used to determine the budget, it is the SharePoint administrator's responsibility to find a way to balance the constraints of the budget with the demands of the users. For example, if you determined the need for a three-server SharePoint farm but you can only implement a two-server farm, make sure the database server is well optimized so that you get the best performance possible.

Documenting Everything

The final action in the design of a logical taxonomy is the gathering and creation of documentation. As you go through the previously described processes, you should be

creating documentation. If you are doing so, you will have a head start when you get to the end and are ready to finalize the documentation.

After designing the logical architecture for your SharePoint 2010 deployment, you should have at least three sets of documents:

- Logical architecture diagrams
- Business requirements
- A budget sheet

The logical architecture diagrams will visually describe your SharePoint implementation from a logical view. It should show the number of server farms, site collections, and sites that you will deploy.

The business requirements will document what the SharePoint implementation capabilities should be and how it should perform. You may want to create documents listing requirements categorized as functional, nonfunctional, departmental, and organization-wide. This documentation should be approved (signed-off) by the sponsor and key stakeholders.

The third item listed is the budget sheet. This can be created as a simple Excel workbook with the software, hardware, and man-hour costs listed where appropriate. This sheet can be used for budget tracking throughout the project as well.

Consider this suggestion: Implement a single-server SharePoint installation before your first business team meeting. Use this installation to view features and even to document your project. This method allows you to take care of two problems at once. First, you have a place to store your documents. Second, you have a test server to use during deployment planning.

Summary

In this chapter, you began your exploration of SharePoint 2010 by learning about the different editions and features in the product line. You learned that SharePoint 2010 is a 64-bit-only product and that it runs on 64-bit editions of Windows Server 2008 and Windows Server 2008 R2. You also learned about the features provided by the different SharePoint 2010 editions and which edition you need to get the features you require. Next, you learned about the SharePoint information architecture, which consists of server farms, site collections, and sites. You also learned about the different objects stored in sites such as lists, libraries, and pages. You explored the backend database in which these objects are placed. Finally, you looked at the logical taxonomy design process as an important part of your SharePoint deployment.

Exam Essentials

Knowing SharePoint editions and features. Understand the different editions of SharePoint 2010 so that you can choose the right edition when given a scenario. Know the features that are not available in the SharePoint Foundation 2010 server.

Understanding the SharePoint logical architecture. Know the logical hierarchy of a SharePoint deployment and the purpose of each level in the hierarchy. SharePoint starts with a server farm, then site collections, then sites, and then the objects within the sites, such as lists, libraries, and pages.

Designing a logical taxonomy. Ensure that the logical design you create is able to expand to support the information it will contain and that it is simple enough for users to navigate easily.